

**EXAMINING SHEA BUTTER EXTRACTION BY RURAL WOMEN; ITS CONTRIBUTION TO HOUSEHOLD
FOOD ACCESSIBILITY: A CASE AT GUMBUNGU DISTRICT IN NORTHERN GHANA.**



A research thesis submitted to Van Hall Larenstein University of Applied Sciences in partial fulfilment of the requirements for the award of Master Degree in Management of Development, Specialization in Rural Development and Food Security.

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11th September, 2018

DEDICATION

This work is dedicated to my dearest Mum; Abiiba Rahaman and myself Amidu Abdul-Rahaman. My determination and hard work with your love and prayers have been the driving force that pushed me through this passage of study.

ACKNOWLEDGEMENTS

I am grateful to the following people for contributing in different ways to making my master program at the Van Hall Larenstein University of Applied Science a successful one.

My first gratitude goes to the Almighty God for the protection, guidance and grace throughout the study programme. Glory be to his name. Much thankfulness to Ghana education trust fund (GETFUND) for the financial support, The Netherlands Government for such educational opportunity. Great thank you; my supervisor Leonoor Akkermans for her critical insights, firm guidance, patience and constructive feedback throughout the research process. I looked at the research as a big challenge at the beginning but you encouraged me to go for the best result to defeat that challenge. I am grateful for giving me such confidence. My course coordinator and mentor; Dr. Annemarie Westendorp thank you for the guidance and mentoring that help me to improve on my academic performance. Dr. Suzanne Nederlof; my specialization coordinator, I appreciate your support. All the lecturers of Van Hall Larenstein University, thank you for the knowledge you impacted on me. To Mensah Kabiru; thank you for the great assistance during my field work.

Multiple Ecological Farms (MEF), thank you for allowing me to pursue this programme. Thank you Tahiru Hamid and all other friends who supported me from day one till I fished collecting the data am also grateful to the Zangbalung Assembly member for the support at the community entry. Silas you played a key role by following to me to capture videos. Lastly, great appreciations goes to my research lecture Pleun Arensbergen for giving that systematic understanding on how to do research. All friends who were involved but have not been mentioned I am equally grateful for your support. God bless you all.

ABSTRACT

In Northern Ghana, shea nut tree is often referred to as the Northern “cocoa” supposedly to signal the potential of Shea-nut as a weapon against poverty and to alleviate and empower women in terms of their financial status. This study was conducted to assess the contribution of shea butter extraction to women income and household food accessibility in Kumbungu district. The researcher employed mixed methods of data collection approach in this study among rural women in Kumbungu. Purposive, simple random and snowballing sampling techniques were used to select out communities and respondents. Semi-structured interview, observation and focus group discussions were applied to collect the data. The collected data was filled on cleaned for completeness and analyzed using Statistical Package for Social Science (SPSS) windows version 21.0 and word excels 2013. Findings from the study showed that, a bigger part of the value share (71%) was taken by the traders followed by the butter extractors with about 22.5% of the value share, the least were the pickers who took about 6% of the share. Based on the results, the researcher concluded that, majority of the respondents was females due to their dominance in the shea butter extraction business in rural area like the study district. The income status of women involved in the shea butter extraction groups was in a way improved which they said assisted them to provide food for their households in times of the lean season in the year. The researcher recommended that, the Ghana government one district, one factory policy should put factory in the study area to produce shea fruit juice and jam for local use and export that will directly create a new other way of generation income from the shea business.



Take 11 minutes 33 seconds of your time to watch a full mini video documentary of the Shea butter extraction process observed by the researcher during field work at the Kumbungu district. **Connect to internet** and follow the link below or Copy link and paste in your browser address bar to watch video.

https://www.youtube.com/watch?v=_59Rlj8c_rl&feature=youtu.be

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CHAPTER ONE

INTRODUCTION

Background of the study:

Shea butter, an extract from the Shea tree (*Vitellaria paradoxa*) has attained global recognition and interest, its importance in the area of the food industry (margarine, confectioneries and chocolate), the health industry (ointments and drugs) and cosmetic industry (body lotion and hair products). The demand for Shea in the cosmetic industry is growing because of its high quality and characteristics such as moisturizing, anti-irritant, regenerative, anti-inflammatory effects and ultraviolet (UV) absorbing functions are increasingly recognized in many developed countries (Carette et al., 2009). In the last hundred years, western demand for shea kernel has been increasing. Expert traders in the sector estimate the current total at 150,000 metric tons (MT) of dry shea kernel exported from Africa annually (Lovett, 2005). Shea butter may not be a word in the United States household yet, but it is stealthily making its way into American homes in cosmetics and skin products. Its price is superb as a result of the healing and moisturizing properties, shea butter represents one of the growing lines of "natural" products popularized commercially in America, UK, Japan, Canada, France and the Netherlands on Sunscreens, skin creams, lip pomades, and hair products. Shea nuts are collected from indigenous shea tree in Africa's Sudano-Sahelian region and processed into butter by women. An export stimulated by the West's rediscovery of non-timber forest products (NTFPs) as cosmetic ingredients that had been replaced by chemicals in the nineteenth and twentieth centuries (Nelson and Seager, no date). These have increased the demand and exportation of the Shea butter or nuts by producing countries, mostly the West African countries. The current episode in the demand for shea butter is the recent recognition by the United States market of these shea butter beneficial properties.

Till date it is estimated that the amount used in the Western personal care market is about 10% of the total African export, i.e. 5,000 MT of shea butter (assuming an extraction rate of 33% by weight) with demand in the United States considered to be growing at 25% per annum (Lovett, 2005). Most recently, dietary-aid products have been developed from shea butter fractions for both humans and animals. It is crucial to consider the global and the local conditions of shea production: from the shifting demands of a global shea market still dominated by the food industry – rather than the cosmetics trade (Nelson and Seager, no date). The foremost reason for this growing interest has been the recognition given by the cosmetics industry and its consumers of shea butter (Lovett, 2005). In response to the increasing demand of shea butter many Non-Governmental Organizations (NGOs) and private companies have formed and facilitated the formation of shea producer groups or cooperatives in the shea producing communities of Ghana to enable shea processors gain higher prices for their produce through collective actions. Carette et al. (2009) observed that over the last two decades, there has been proliferation of shea producer cooperatives and associations in the Northern Region of Ghana.

Table 1: Is estimated Example of Shea nut Equivalent Tons Annually Exported

Country stearin producers <i>Vitellaria paradoxa paradoxa</i>	(major only: subsp.	Estimated total exports Sheanuts (t)	as converted (kernel equivalent of country crop* t)	Shea butter pre-export (kernel equivalent of country crop* t)	Estimated total Shea export (t)
Benin**		15,000	10,000		25,000
Burkina Faso***		45,000	25,000		70,000
Côte d'Ivoire		30,000	10,000		40,000
Ghana		30,000	30,000		60,000
Guinea-Conakry		7,000	3,000		10,000
Mali		60,000	15,000		75,000
Nigeria		30,000	15,000		45,000
Togo		15,000	10,000		25,000
		232,000	118,000		350,000

Sources: Global Shea Alliance. Shea Expert, USAID West Africa Trade Hub by Dr. Peter Lovett – plovet.

The above table illustrate the figures given as dry kernel equivalent to shea butter that is one (1) ton butter exported requires 3 tons of Shea nuts and so butter export is given as kernel (Shea nut) equivalent. From the figures Ghana is exclusive higher in the export of shea butter (30,000 tons) over the other major West African producing countries. Although Mali and Burkina Faso dominated by the shea nut export, with 45,000 and 60,000 respectively. This exported quantity from the West Africa countries is as a result of increasing demand from the western world.

Table 2: Shea nuts (kernels) and shea butter exports from Ghana, 2005-2009

Years	Shea Nuts			Shea Butter		
	Quantity (metric tons)	Price/tons (\$USD)	Value (\$USD'000)	Quantity (metric tons)	Price/tons e (\$USD)	Value (\$USD'000)
2005	165.53	175	28,968	0.65	1,451	941
2006	104.80	260	27,249	0.58	1,542	894
2007	57.22	472	27,009	10.30	744	7,660
2008	55.55	449	24,940	4.01	1,617	6,488
2009	67.81	396	26,853	12.57	1,513	19,013

Source: GEPC, 2010 as cited in MOTI 2011

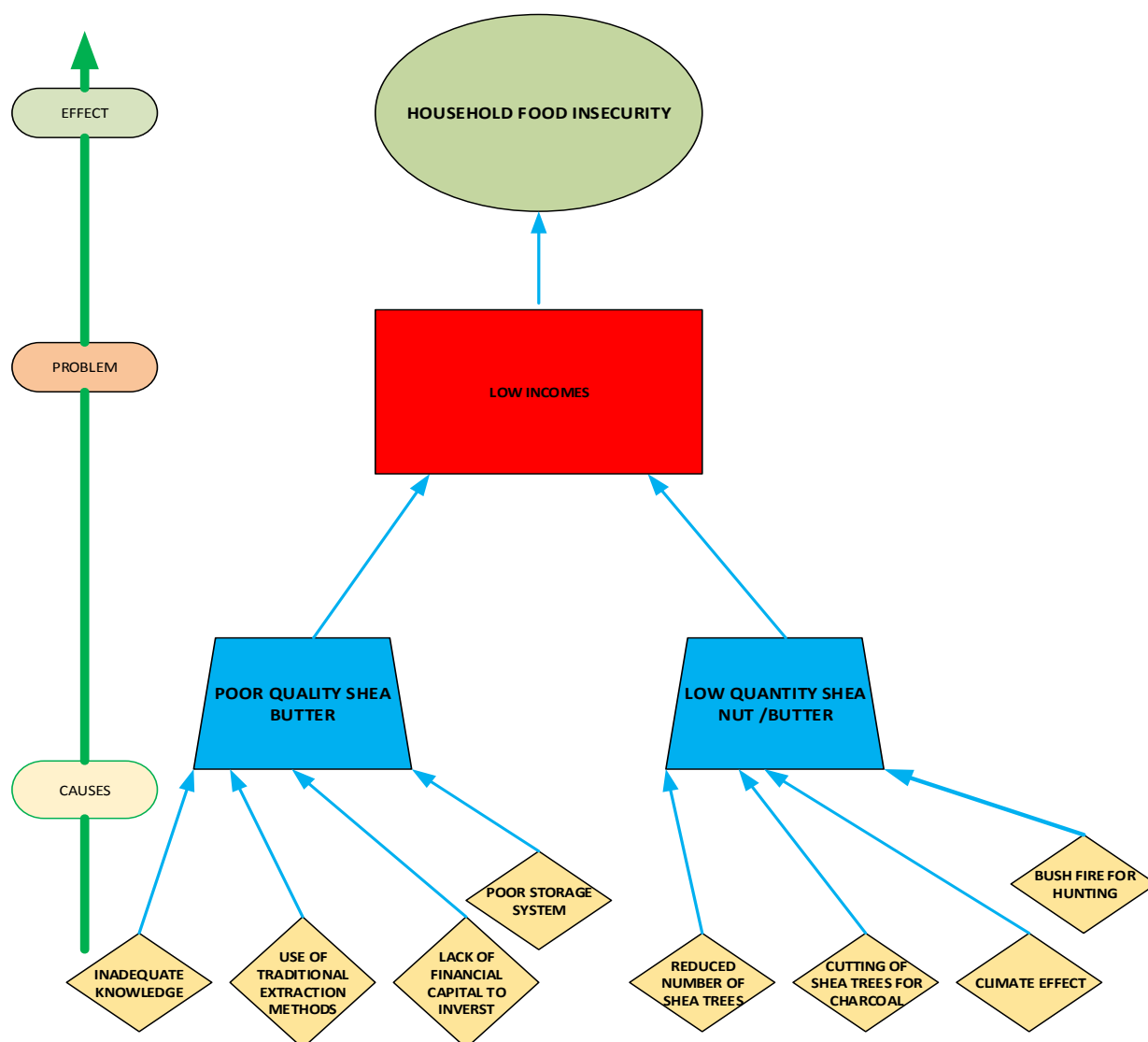
The table above indicate how the export of shea nut and butter is increasing over the past years in Ghana. Also the value of shea butter from 2005 to 2009 show an increment on the value exported. Shea butter has been referred to as “women’s gold” mainly because of its rich golden colour and the employment it provide for women across Africa. In Ghana it is referred to as the Northern “cocoa” supposedly to signal the potential of Shea-nut as a weapon against poverty and to alleviate and empower women. It is estimated that about 9.4 million shea trees grow in Ghana, and these can potentially yield one hundred tons of shea nuts and wen turn in to butter, worth about 100 million USD per year (Dogbevi, 2009). The 2006 the Stichting Nederlandse Vrijwilligers (SNV) study to analyze and understand the shea value chain in a holistic manner, it’s relationships, motivation, opportunities and constraints to develop appropriate strategies to link various actors involve in a mutually rewarding manner, indicates that more than 600,000 women in Northern Ghana depend on incomes from shea butter and other shea-related products for their daily sustenance; supplementary family

food budget, medical and educational expenses (Jibreel *et al.*, 2013). Northern Ghana in general, many women process shea butter as their main source of income (Jibreel *et al.*, 2013). After shea butter is extracted, the residue serves as superb fuel for cooking, and can also be mixed with mud for plastering traditional mud houses. It is also known that wood from the shea tree is suitable for making hand craft tools, such as hoe handles for farming, pestles and mortars for food processing, and the carving of local talking drums which play important roles in the cultural life of northern Ghana. Apart from the income of the butter, Shea tree is a good source of food for most people of the northern parts of Ghana, especially women, who have the responsibility to supply the daily food intakes for their families. The shea fruit maturity corresponds with the lean season of food production. The fruit is sweet and edible. Shea butter forms the utmost percentage of oil intake in most homes in the northern regions of Ghana (Dogbevi, 2009). Women in Northern Ghana are considered to be the most vulnerable to poverty due to gender inequality and their inability to access resources and assets (Yussif, 2015). Lack of access to and control over resources by African women has been recognised by numerous studies as the single most important cause of gender inequality (Tamale, 2004). The most important resource that the women have now is their labour that is exploited by the patriarchal state (Tamale, 2004). Aside the fact that there is a growing demand for shea nuts for butter, the industry is dominated by rural women who are normally the most economically disadvantaged group due to their limited access to productive assets (Hatskevich *et al.*, 2011). In addressing the problem of women and poverty several NGOs set up women groups in Shea butter extraction, away of equipping and empowering the women (Carette *et al.* (2009). To further understand the function and value share (Income) of these rural women in the shea butter value chain, the flow of the value chain map were observed.

1.2 CAUSAL DIAGRAM ILLUSTRATION

The causal diagram below was used to illustrate the possible cause and effect of women household seasonal food insecurity in the research area (Kumbugu District) of northern Ghana. This was done by looking at the possible root causes, underlying causes, the problem and the effect. The causal diagram point out low income earnings by the women in the butter and shea business as a problem, caused by poor quality shea butter and low quantity of shea nut available for butter extraction, leading to low butter supply for lower incomes. From the causal diagram, poor quality and low quantity of shea butter is determined by several underlying causes such as Inadequate knowledge in the butter extraction, use of traditional method of extraction, lack of financial capital to invest in the business, poor storage system for butter and nut, reduces number of shea trees, bush fire for hunting and climate change effect on the shea trees. As result of these causes the women earn low incomes in the butter business and would not have the capacity to access adequate food in the lean season with this low incomes. The authors of a study conducted in London, Ontario, however, concluded that low-income areas in inner-city neighbourhoods have the poorest access to supermarkets (Kirkpatrick and Tarasuk, 2010). A study conducted by department of nutritional Sciences, faculty of medicine in University of Toronto, Ontario, Canada indicates that the amounts of food purchased by low-income households appeared to purchase significantly fewer servings of vegetables, fruit and milk products in comparison to higher-income households. (Kirkpatrick and Tarasuk, 2003). The inability for a household to access this diversity limits the household nutritional status that would them to food insecurity.

Figure 1: Show Causal diagram of Shea butter extraction (Causes and Effects)



Source: Author's Construct, 2018

1.3 PROBLEM STATEMENT:

Food insecurity is a seasonal difficulty faced by rural women household in northern Ghana, particularly the kumbungu district, this has been frequent every year between April and July. During this period rural households need other income sources as a strategy to help survive through the period of the food shortage. This food shortage period coincide with Shea nut picking and processing time, women households therefore depend on this shea nut and butter processing as a livelihood strategy. Shea is considered a women's crop, and the extraction, processing, and commercialization of shea fruits, kernels, and butter are some of the few activities that are almost entirely under the control of women (Pouliot, 2012).

The Ghanaian women in shea nut and butter processing sector face a lot of challenges that affect their household income and food accessibility especially in norther Ghana. According to the Stichting Nederland's Vrijwilligers (SNV) study (2006), indicate that more than 600,000 women in Northern Ghana depend on incomes from shea butter and other shea-related products for their daily sustenance. The importance of shea income is recognized by all. Over 90% of women were involve in collecting the nut (Sunderland and O.Ndoye, 2004)

Despite the global increase in demand for Shea butter in the cosmetics, pharmaceutical and food industries in recent times, little is known about why women in Shea butter extraction in kumbungu district have low incomes and seasonal food insecurity. It is because of the lack of knowledge that multiple ecological farms (NGO) want to find the relationship between rural women household

income from the Shea butter extraction and food accessibility in the Kumbungu District in northern region of Ghana.

1.4 GENERAL OBJECTIVE:

The objective is to study the contribution of Shea butter extraction to household income and food accessibility of women in kumbungu district.

1.4.1 Specific Objectives:

- a. To know how women get access to Shea nuts for Shea butter extraction.
- b. To find out how the income from Shea butter extraction is used by women in the households.
- c. To identify other ways income can be generated from Shea butter business activities.
- d. To determine the causes of household food insecurity among women in Shea butter extraction business.

1.5 MAIN QUESTION:

How does rural women income from shea butter extraction contribute to household food accessibility in Kumbungu district?

1.5.1 Sub-question:

- 1) Why are rural women in Shea butter extraction having low incomes?
- 2) What are the constraints face by women in Shea butter extraction and marketing?
- 3) How is the income gotten from Shea butter extraction used by the household (Who controls it?)
- 4) What are the other sources of income to the rural women's household?
- 5) Who are actors in the Shea butter extraction value chain?

It is important to know the actors involve in the shea butter business to enable the researcher to design an appropriate value chain map and a value share to identify which actor is making profit in the business with adequate income for food.

1.5.2 Significance of the study:

Women dominate the shea butter trade, as result any intervention in the sector base on recommendation of this study will have huge implication for gender development and equality. The research will provide knowledge and information on challenges faced by women in Shea butter extraction and marketing for **multiple ecological farms** (NGO) to design appropriate interventions to improve their incomes for food accessibility. The research will also provide information on the value share distribution among actors in the shea business which could go a long way in informing policy makers, researchers and development practitioners on how to enhance equitable distribution of the benefits in the shea butter value chain. The research will also provide knowledge on important issues raised by the women in the communities and the appropriate intervention to address them. The research will identify new ways of generating income from the Shea butter supply chain through the recommendations of the respondents and observations to help increase household food access and reduce poverty. The research will provide recommendation useful to policy makers and NGOs in their efforts to improve livelihood of people in the shea butter sector by revealing areas that require special attention. The study would also add new knowledge to already existing literature on shea value chain in Ghana.

1.6 REPORT STRUCTURE:

This report is organized into five chapters.

Chapter one:

Details of the background to the study, the problem statements as well as the research questions and objectives of the study.

Chapter two:

Literature review on the value chain concepts as well as outlook of the global Shea value chain.

Chapter three:

A description of the research area and methodologies and design of the study are presented.

Chapter four:

Presentation of results or main findings of the study. (Descriptive and gross margin analyses as well as t-test).

Chapter five:

Discussing of the main findings of the study.

Chapter Six:

Draws conclusions and provides recommendation as well as limitation to the study and suggestions for future research.

CHAPTER TWO

Literature review:

2.1 Introduction:

This chapter critically analyses by concepts, contribution of Shea butter extraction to household income and food accessibility of rural women. The literature outlines what has been done by others in this area and then identifies some knowledge gaps as far as shea butter extraction by rural women was concerned. It utilizes the literature from these previous studies to generate empirical study that forms the basis of this study methodology.

2.2 Concept of household:

A household is defined as a person or a group of persons, related or unrelated, who live together in the same dwelling unit, who make common provisions for food and regularly take their food from the same pot or share the same grain store, or who pool their income for the purpose of purchasing food (ILO, 2004). A household's economic well-being can be expressed in terms of its access to goods and services. The more a household can consume, the higher its level of economic and social wellbeing among its members. However, a household may choose not to consume the maximum amount it could in any given period but to save at least some of the resources it has available (De Haen, Klasen & Qaim, 2011).

2.3 Household income:

According to the International Labour Organization (ILO, 2004), household income consists of all receipts whether monetary or in kind (goods and services) that are received by the household or by individual members of the household at annual or more frequent intervals, but excludes windfall gains and other such irregular and typically one-time receipts. Household income receipts are available for current consumption and do not reduce the net worth of the household through a reduction of its cash, the disposal of its other financial or non-financial assets or an increase in its liabilities (Wolfe & Frongillo, 20

Picture 1: shows the researcher and participants of focus group on left and interviewing respondent at the right
Source: Author own captured 2018



Household income may be defined to cover also: (i) income from employment (both paid and self-employment); (ii) property income; (iii) income from the production of household services for own consumption; and (iv) current transfers received (Gottschalk & Smeeding, 2000). Household income, rather than personal income, is generally the preferred measure for analysis of people's economic well-being. This is because the major determinant of economic well-being for most people is the level of income they and other family members living in the same dwelling receive. While income is usually received by individuals, it is normally shared with other household members (De Haen, Klasen & Qaim, 2011).

2.4 The concept of food security:

The most commonly accepted definition of food security is the World Food Summit, 1996 definition that says "food security exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (Food and Agriculture Organization, 2012).

Picture 2: shows the researcher helping to pick shea nut on left and eating shea fruits he bought at the right
Source: Author own captured 2018



This definition covers four dimensions and components of food security, including; physical (i.e., availability), social, and economic access to food; sufficient quantity and quality of food to meet nutritional requirements (utilization); the safety of food; and the ability of individuals to make choices and consume culturally acceptable and preferred foods; stability of food for all people at all time, as well as linking the definition of food security to key health and productivity outcomes. This definition integrates the notion or perceptions of food insecurity and of "feelings of deprivation" in individuals, which may trigger response behaviors that can deepen current poverty or lead to the transmission of poverty to the next generation in the longer term (visual cycle of poverty). Some of these behaviors carry important nutritional risks, thus undermining health and productivity, especially for the most nutritionally vulnerable household members, such as pregnant and lactating women and young children, who have high nutrient requirements (Gottschalk, & Smeeding, 2000).

While the definition of food security is simple and is often measured by household access to food (Roos, et al. 2013), it is a complex concept. Food security as a situation when people, at all times, have physical and economic access, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (Charles, 2011)

According to this definition, there are three important interlinked components of food security: availability, access and utilization. Therefore, a household is food secured in a given time period if the person assumed to be in shea butter extraction business has enough income to buy food to provide its members all the usual meals in a day, for the entire period (Sidn & Basu, 2011). Otherwise, the household is food insecure.

2.5 The concept food availability:

The concept of the availability of food involves issues of production and distribution. The availability of food means that there is sufficient food physical availability at the household, community, state and/or international levels to provide food for everyone (Charles, 2011). For the majority of the hungry in the world, self-production or production within their community is the primary means of ensuring the physical availability of food for them and their families. For others in the world availability involves the distribution of food and food products to humanitarian or retail outlets within their community (Chreckenber, 2004; Charles, 2011).

2.6 The concept of food accessibility:

The right to adequate food is realized when every man, woman and child, alone or in community with others, has physical and economic access at all times to adequate food or means for its procurement. For those producing their own food, accessibility includes an adequate resource base and the appropriate tools and resources to engage in food production (FAO, 2012). Food accessibility also includes the physical ability to provide the labor needed to farm (Roos et al. 2013). For those not engaged in their own food production, accessibility means the ability to earn enough to participate in the retail market for food (De Cock et al. 2013). Food accessibility can also be made available through a form of social security provided by family members for those too old or weak to earn a living or produce their own food. For some food accessibility involves obtaining food from aid agencies (Chreckenber, 2004).

2.7 The concept of Food Utilization:

Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. This brings out the importance of non-food inputs in food security. Adequate utilization exists when “food is properly used; proper food processing and storage techniques are employed; adequate knowledge of nutrition and child care techniques exists and is applied; and adequate health and sanitation services exist” (USAID, 1992, p. 4). This change effectively folded, into the food security construct, concerns over individual-level distribution and consumption of micronutrients and the physiological ability to use them.

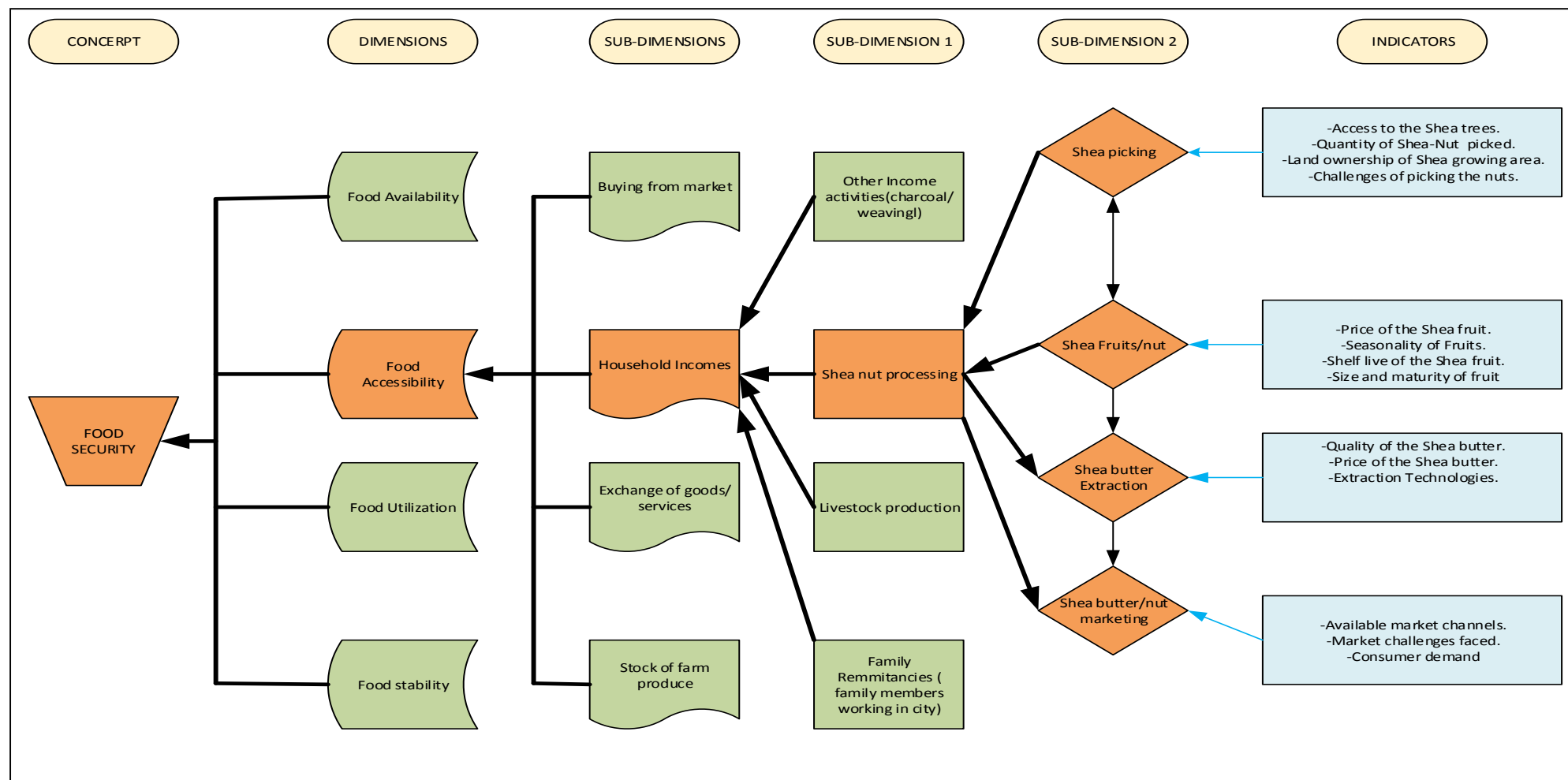
2.8 The concept of food Stability:

To be food secure, a population, household or individual must have access to adequate food at all times. A person is still considered to be food insecure if he/she has inadequate access to food on a periodic basis, risking or worsening his/her nutritional status even if an individual’s food intake is adequate for a day. The concept of stability can therefore refer to both the availability, access and utilization dimensions of food security. To meet future climatic, economic, and social challenges, agriculture needs to be made more productive, stable, and resilient while minimizing environmental impacts. (S.G., 2013).

From these four dimensions the focus and objectives of this study are more related to food accessibility. Figure 2 depicts a conceptual framework of the study which guided me on the study and answered the research questions during desk study and field work. This conceptual framework was design by the author, taking in to consideration of the world food summit, 1996 definition of food security, whiles focusing on accessibility and its possible sub-dimensions and indicators. It was possible to design the conceptual framework because the researcher looked at the correlation between what

is meant to be food secured as a dependent variable and the four dimensions needed to achieve food security as independent variables. It was further developed and completed by looking at the focus of the research topic, objective and question which is food accessibility. Possible sub-dimensions of food accessibility in the household were enumerated while focusing on household incomes as a dependent variable on Shea nut/butter processing (independent variable) and going on to their indicators. The framework guided me during my fieldwork to find out the relationship between household income from Shea butter and food accessibility among rural women in Kumbugu district in Northern region of Ghana. Below is the conceptual framework for the study.

Figure 2: Conceptual Framework for the study



Source: Author's own construct, 2018

2.9 The Shea tree:

In Northern Ghana Shea trees dominate the savanna parklands and are intentionally preserved largely on farmlands because of its importance to the subsistence of farm households (Chalfin, 2004). The tree is perennial and starts bearing its first fruits between 10–15 years old and attains full production when it is about 20–30 years producing nuts for up to about 200 years. The yields of the Shea tree vary significantly per tree (Kelly, 2004). The average yield is 15–20 kilograms of fresh fruit per tree, with optimum yields up to 45 kg (Deng, Dossou & Tanko, 2017; Chreckenber, 2004)

Picture 3: shows a child harvesting shea fruits to sell and shea fruits on top of the shea tree.

Source: Author own captured 2018



Each kilogram of fruit gives approximately 400 grams of dry seeds (Lovett, 2004a). Every part of Shea tree is useful, for instance the fruit is eaten, and the leaves serve as fodder and an ingredient for making alkaline and paint (Sidn & Basu, 2011; Al-hassan, 2012). The kernels of the shea fruit have high concentration of oils and have long been collected and processed by women in savannah communities, where they provide a useful source of fats in diets (Deng, Dossou & Tanko, 2017; Sidn & Basu, 2011). They are sun-dried for few days before storing in sacks and if they are properly dried kernels can be stored up to 2 years without going bad. Shea nuts and butter have over the years been an important commodity for trade in West Africa and in Ghana for that matter (Theophilus, Kodua & Mary, 2018; Deng, Dossou & Tanko, 2017).

2.1.1 Concept of shea processing:

Women usually collect and heap shea nuts until they have sufficient quantity for boiling and this affect the quality of shea kernel produced (Al-hassan, 2012). The fruit pulp is removed by allowing it to rot or dry (Chalfin, 2004; Deng, Dossou & Tanko, 2017). The fragile shell is similarly removed by cracking and winnowing and the nut (kernel) sun dried before storage. The kernels are dried to reduce the moisture content from about 40% to about 7% (Deng, Dossou & Tanko, 2017).

Picture 4: shows the researcher helping to do traditional crushing of nut and women doing butter neading
Source: Author own captured 2018



In West African boiling of the nuts (parboil) are usually done to kill the embryo and thus prevent germination of the seeds. This method has the additional advantage of inactivating the lipases that are responsible for hydrolytic degradation of shea butter (Deng, Dossou & Tanko, 2017). Because of the presence of lipase enzymes in the living shea kernel, in post-harvest processing, the kernel should be quickly killed by parboiling (control boiling) before drying in order to make the kernel chemically stable and be stored without further chemical processes affecting the lipid content.

2.1.2 Marketing of shea butter:

On the international market, Shea kernel is sold in grades with higher grades attracting premium price and bonuses. In order to achieve the value of shea products, quality assurance is of great concern. Holtzman, (2004) reported that, one cannot export shea kernel without having access to high quality products. Presently shea is exported from Africa to France, Great Britain, the Netherlands, Denmark, North America and Japan (Chalfin, 2000).

Picture 5: shows the researcher, buying one kilogram of butter to know the actual price in the local market.
Source: Author own captured 2018



Without quality assurance and control, Ghana exporters of shea kernel and butter cannot favorably compete with others in the international market. One of the factors that contribute to poor quality of Shea kernel is storage (Al-hassan, 2012). The leading shea producers and exporters include Burkina Faso, Mali, Ghana, Nigeria, Côte D'Ivoire, Benin, Togo and Guinea. Exports of shea nuts from these countries have increased dramatically in recent years, from 50,000 tons in 1994 to 150,000 in 2004 and finally to 350,000 in 2008 with Ghana alone exporting 50,000 tons in 2008 (Chreckenber, 2004).

1.1.3 Shea butter extraction:

Extraction is a process in which one or more components of the shea nut are separated selectively from a

Picture 6: shows women frying crushed nut and boiling the grinded shea nut paste for oil.
Source: Author own captured 2018



liquid or solid mixture. Attempts have been made to introduce small-scale technology to extract shea butter, especially the use of a bridge press with marginal yield increases over the manual method. The resulting press cake provides a useful fuel wood substitute. Commercial expellers are used to extract the butter from shea nuts due to economies of scale. Shea butter is a vegetable fat processed from the seeds of a tree that grows in savannah Africa. In Ghana, its production is restricted to the three most northern regions. Processing is traditionally conducted by women, and most of their produce is sold for local use, either as cooking fat or as a skin moisturiser.

2.1.4 Sources of Shea nuts:

The shea tree (*Vitellaria paradoxa*) commonly grows in the Guinea Savannah and sparsely in the Sudan Savannah areas of Ghana that is almost the entire area of Northern Ghana (Issahaku, Al-hassan & Sarpong, 2011). The Shea tree has played significant role in the livelihood of the rural people in Ghana Over centuries (Rousseau, Gautier & Wardell, 2015). It is considered as one of Ghana's economic natural resources that could be exploited and used as a tool for substantial poverty reduction and socioeconomic development especially in Northern Ghana (Chalfin, 2004). Studies have examined how accessible the shea nuts have been to people most especially rural women who used them for varied purposes.

In a descriptive cross sectional study designs that was conducted in Benin to assess the contribution of shea butter to local livelihoods. Findings from the study showed that, most women who were engaged in the shea nuts businesses had their shea nuts from the forest. It was revealed that, most of the women were engaged in shea nuts picking by themselves whilst others engaged the services of family members for the shea nuts (Chreckenber, 2004),

Picture 7: shows the researcher helping women in picking shea nut/fruits.
Source: Author own captured 2018



Similarly, in a descriptive cross sectional study carried out by Theophilus, Kodua, and Mary, (2018) in Ghana, specifically in Kaleo in the Upper West region of Ghana, revealed that, most women in the rural part of the region who were engaged in the shea butter business were picking them from the forest. The findings showed that, most of the shea nuts were normally picked raw and few were picked after insects and animals had eaten the pulp leaving the hard seed in the bush. It has also revealed that, most rural women engaged in shea nuts businesses get access to the shea nuts from the forest (Chreckenber, 2004). Most rural women in a descriptive cross sectional survey revealed that, the shea nuts trees were own by the community members (Pouliot, 2012). In a study conducted by Lovett (2004), he pointed out that stakeholder's involvement in the Shea butter processing business includes village pickers and post-harvest processors of Shea nuts.

In Benin, studies have confirmed that, rural women engaged in shea nuts extraction businesses were found to be buying the nuts for extraction according to (Rousseau, Gautier & Wardell, 2015). In a survey conducted to assess the usefulness of shea trees among rural households. Findings from the study showed that, all the respondents maintained that Shea tree plays a vital role in support of their livelihoods. The results revealed that, almost all community members were involved in protecting the Shea trees since that was where they got their shea nuts from. It was revealed that, people usually did not plant shea trees but could claim ownership of them depending on where they had appeared on the farm land. Most of the community members got access to the shea nuts by picking whilst others indicated that they were engaged in harvesting the fruits for the shea nuts (Lovett, 2000). Similarly, according to Addaquay (2004), Shea trees in most communities were considered as important economic plants. Findings from their survey revealed that, about, 73.3% of the respondents said in order to control the distribution of Shea in their communities, they hindered the cutting of Shea trees and also maintained public awareness concerning the importance of the tree. At the same time the respondents (76.7%) mentioned that they did plant and protected Shea trees on their farms. Moreover, a survey also revealed that, about (46.7%) study participants said there was law regarding protection of Shea trees in their community whilst 23.3% pointed out that they did not have any idea concerning laws regarding the protection of Shea trees (Deng, Dossou & Tanko, 2017). About, 80% of the respondents maintained that sanctioning was one of the penalties used on those who were involved in destruction of Shea trees within the community since they were depending on shea nuts picking for shea butter extraction business in the community.

2.1.5 How rural women use the income from Shea butter extraction in the households:

Shea butter is a fatty extract from the seed of the Shea tree. According to Kelly (2004), shea butter is a staple component of the local diet, and at the same time its kernels serve as an important source of income for women. The local shea butter industry has over the years contributed substantially to the socio-economic development in most parts of the world especially West and Central Africa and serves as an important household resource in the Savannah regions of Ghana, Cote d'Ivoire, Burkina Faso, Mali, Togo, Benin and Nigeria (Al-hassan, 2012; Deng, Dossou & Tanko, 2017; Chreckenber, 2004).

According to Adda Quay (2004) most rural women who were engaged in shea butter extraction businesses used the income generated to buy foodstuff for the family. It was also revealed that, most rural women also used the income generated to buy ingredients to prepare meals for the family. However, according to Lovett (2004a), most rural women in Ghana who were engaged in shea butter businesses used the income generated to buy property for their children. It was revealed that, most of them used the income generated to buy animals such as goats and sheep which later they could sell to buy a cow. Women engaged in shea butter extraction businesses in most communities are mostly non educated and middle aged women selling food dishes and snacks at their homes and along street sides. The income generated from these sales may not be much as expected. Nonetheless, it assists to compliment the family income. Consumers linked the following butter characteristics to its quality: colour, smell, taste and moisture content. White shea butter is preferred by most in the Northern region, as it is seen as pure shea butter and most suitable for cooking (Sidn & Basu, 2011; Theophilus, Kodua & Mary, 2018).

Yellow butter is generally more popular in the Southern regions, as the colour is found more attractive and the shea smell is less due to the root additives. Women involved in shea butter extraction businesses pointed out that the choice for a certain type of shea butter depends on the purpose for the butter, its price, the way it was processed and its availability (Al-hassan, 2012). When shea butter was said to be disliked the main mentioned reasons were that they disliked the smell and taste, or in the case of food sellers that they were afraid that their customers would dislike it. It was mentioned that local consumption of shea butter decreased due to the increase in availability and popularity of alternative products, like palm oil for cooking or modern skin care products and that demand from the south of Ghana increased due to the increased knowledge there on the product and its many uses (Lovett, 2004a; Theophilus, Kodua & Mary, 2018). Due to this increased demand consumers think that in total there is more shea butter production now a days than in their childhood generating income for women (Deng, Dossou & Tanko, 2017). In a descriptive cross sectional study carried out by Rousseau, Gautier and Wardell (2015), the results revealed that, rural women engaged in shea butter extraction processes used their income and most had control over the spending of their income. It was also showed that, few of the women representing 14.3% said that their husbands always consulted them on the use of the money whilst 74.7% said that they were sometimes consulted and 11.3% said that they were never consulted on how to spend their income generated from the shea butter extraction and that their husbands spent the money.

Concerning how rural women engaged in mitigating financial shocks, the results showed that, most of them representing 48.6% said they primarily used their savings from shea butter extraction businesses and 31.3% said that they sought help from family or friends. Hitherto there was never been a social protection programme in Burkina Faso to help rural women engaged in shea butter extraction business to mitigate shocks. Similarly, studies have shown that, most rural women engaged in shea butter extraction businesses generated income from the sales of butter whilst only 23.8% of rural women received an income solely from shea nut extraction business. It was further revealed that, 6.5% of the rural women indicated that, they supplemented their income from agriculture produces whilst 30.3% said from small-scale business and 30.8 percent from hand-made or non-industrial work (Pouliot, 2012)

The local shea business is one of the most vibrant traditional businesses aside farming in the northern part of Ghana and it serves as a source of income to most rural women (Issahaku, Al hassan & Sarpong, 2011). Most people within the region perceived it as a business making venture whilst others looked at the shea butter extraction business as lucrative in making money. Internationally, shea butter has been

traded for so many years for use in food (margarine and chocolate) industry and also in the cosmetics industry which generate income for most rural women (Chalfin, 2004).

2.1.6 Ways rural women do generate income from Shea butter extraction business:

For centuries shea butter has been referred to as “women’s gold” because of its rich golden colour and because it provides employment, medicinal benefits and nutrition for millions of women across Africa (Deng, Dossou & Tanko, 2017). The status of shea nut activities as women’s work has raised attention on the potential of shea industries as a promising development activity for semi-arid regions (remote and low agricultural potential) that offers particular benefits to women (Deng, Dossou & Tanko, 2017). Different studies have found shea to be significantly important for the indigenous people of the upper west region in Ghana as household incomes have increase with shea contributing up to about a quarter to half of it. As an important source of fats and vitamins shea has also contributed to the nutritional values of many households in the region (Theophilus, Kodua & Mary, 2018). The individuals who profit most from the shea butter extraction business are group leaders, who earn three times more than the average rural woman engaged in shea butter extraction (Djossa, 2008).The group leader are those who keeps money that the groups save informally, and usually misappropriate it for their own gains to the disadvantage of the other members in the group. In general women identified social rather than financial advantages deriving from

Picture 8: shows prepared by-product of shea butter for re-use and sales for additional income
Source: Author own captured 2018



membership of a shea group. In interviews, rural women claimed that the groups “opened their minds” to learning new skills about shea butter extraction and expressed appreciation of the opportunity to collaborate with other women to generate more income from the business (Carette et al. 2009; Rousseau, Gautier & Wardell, 2015). The groups acted as a social outlet for women, who could discuss issues that might be affecting them at home. Women felt that earning their own income was important in that they could pay for household items and that they felt more respected by others (Pouliot, 2012).

Similarly, there is a need to increase alliances or joint ventures between groups to enhance communication and the regular dissemination of selling prices, and to increase the bargaining power of small scale sellers compared with major buyers (Chalfin, 2000; Kelly, 2004; Chalfin, 2000). A government-sponsored regional or national structure should be set up to provide globally recognized certification or accreditation and increase the visibility of the national product to international buyers (Addaquay, 2004). Leaders of shea groups emphasized the need to provide more affordable and accessible accreditation to

enable them to compete in the international market (Issahaku, Al-hassan & Sarpong, 2011). Women engaged in shea butter extraction business could obtain more money from the business because Shea butter has high concentration of triglyceride giving it rich consistency which is valuable for skin creams, shampoos as well as other cosmetics (Schreckenberg, 2004). Shea activities provide incomes for women mainly but few for men: they range from the collection of nuts, to making raw shea butter for consumption and treating shea butter for creams, pomades and cosmetics (Rousseau, Gautier & Wardell, 2015). Shea is Burkina Faso's third export product after cotton and livestock products, and for this reason it has an important socio-cultural role and is also a critical element in the national economy (Djossa, 2008). The quantity of shea butter bought or either sold differs a lot per woman. Most women usually do not buy shea nut to keep or sell anything at all when the need be. At the same time, others bought 2 bags of shea nuts and resold it at a higher price (Schreckenberg, 2004) which could generate enough money for them. In survey, it was revealed that preceding the survey, among women interviewed, 1/3 bought nuts and 1/3 bought she butter. Among those who bought nuts, 2/3 bought nuts to make butter for home consumption and 1/4 for selling them later when the price got higher. Two out of five of the men interviewed bought some shea kernels nuts last year store them, sell the kernels later at higher prices (Chalfin, 2000).

Some women prefer buying butter rather than nuts because they can use it immediately and because from some nuts are of less quality from which not much butter can be extracted. However, some women explained that they prefer buying nuts than butter because some sellers put porridge into butter to make it look heavier (Chalfin, 2004). Women prefer selling butter to get a higher profit. However, most of them need to sell the kernels, because they are need money on a short term and do not have time to process the kernels into butter. Even as these products are more expensive than shea butter, it is not always perceived that way by consumers. Modern, refined and nicely packaged products are popular among the people In Tamale although people do know the healing and healthy properties of the shea butter (Issahaku, Al-hassan & Sarpong, 2011). In cases of need, as in the Harmattan season, for wound healing or for ritual purposes people do intend to use the shea butter. Although the change in 'modern' mindset, it still seems that many people use shea butter for cooking local dishes and for skincare purposes (Chalfin, 2000). Women could be made to make more money from shea butter through numerous ways. The shea butter is used as edible oil for cooking and for skincare by household members (46% of 55 consumers), by household members and in addition shea butter is used as edible oil in selling local snacks and meals (18% of 55 consumers) and shea butter is solely bought for selling food dishes cooked in shea butter (36% of 55 consumers) (Sidn & Basu, 2011). The characteristics perceived by consumers and non-consumers on which choices are made, are between the shea butter colour (white, yellow, any type), between the texture of the butter (hard, soft, any type) and the smell and taste (Lovett, 2004a)

Picture 9: shows the researcher helping women in neading and woman packaging butter.
Source: Author own captured 2018



2.1.7 Causes of household food insecurity among rural women in Shea butter extraction business:

An examination of women's incomes and of their roles in the industry is required. A recent study in Burkina Faso found that 94% of the women sampled were involved solely in the collection of shea nuts and 59% in the commercialization process (Chalfin, 2004), which shows that women's participation in the more profitable parts of the shea value chain is limited. Since food is an essential basic human need, it is even constitutionally declared as a need to be protected (Lovett, 2000). Rural women engaged in shea butter extractions are commonly characterized by food insecurity, which is a violation of human rights since every human being has the right to food on a daily basis (Chreckenber, 2004; Chalfin, 2000). An uncertain food supply, problems with food quantity and quality, running out of food, lacking money to buy food, skipping meals and ongoing hunger are all elements of being food insecure, thus women engaged in shea butter extraction business in the rural areas develop livelihood strategies to survive. Simply because they have not safe enough income generated from the shea butter extraction business to buy food (Addaquay, 2004). Similarly, Rousseau, Gautier and Wardell (2015) pointed out that the contribution of shea butter extraction businesses has positive influence on food security by providing a variety of food preferences to select from among rural women since they have enough income to purchase. Issahaku, Al-hassan and Sarpong (2011) observed that rural women engaged in shea butter extraction businesses are significant outlets for food distribution to lower-income groups as they bring food retail outlets closer to their family members.

Picture 10: shows the researcher sitting on the shea tree logs cut by community member for fire- wood
Source: Author own captured 2018



They have adequate supply and variety of food options at reasonable prices discovering that high food prices negatively affect food security of the most vulnerable and can have a negative impact on their livelihood and welfare. The ability to ensure adequate food security hinges on the ability to identify vulnerable households. The degree of vulnerability of an individual, household or group of persons is determined by their exposure to the risk factors and their ability to cope with or withstand stressful situations (Deng, Dossou & Tanko, 2017).

Widely reported socioeconomic factors associated with food insecurity include poverty, having large numbers of children, and living in rural locations (Theophilus, Kodua and Mary (2018). Women are also at a higher risk of food insecurity if they do not have enough income generated from the shea butter extraction business. For example, in one study among children in Brazil, females were 2.21 times as likely to be food insecure than males because their shea butter extraction business was low in terms of income (Sidn & Basu, 2011).

Picture 11: shows a woman who went for shea nut picking and did not get enough quantity and picked.
Source: Author own captured 2018

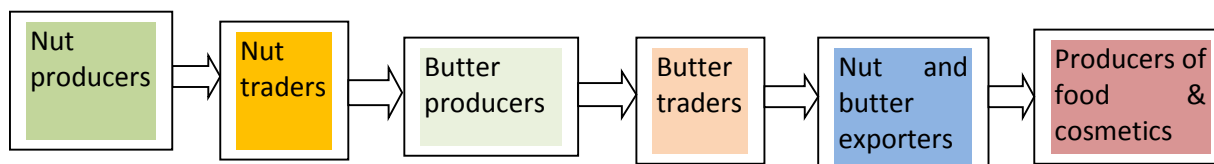


In another study among adolescents in Southwest Ethiopia, being female was a significant independent predictor of food insecurity because the shea butter business extraction was not yielding the needed income for the people (Charles, 2011). Food insecurity is also associated with under-nutrition (Deng, Dossou & Tanko, 2017) and other negative health outcomes, including low dietary diversity (De Cock et al., 2013). Women are the main drives behind the production of Shea butter and Shea tree is seen as sacred. Women's income in West Africa for most part is directly related to the production of Shea butter (Sidn & Basu, 2011; Lovett, 2004a). Therefore any direct impact to the Shea butter extraction business, threatens one of the main income generators for women (Deng, Dossou & Tanko, 2017). Food insecurity remains a significant problem in the world, especially among women and children (Lovett, 2004a; Roos, et al. 2013).

2.1.8 Actors in the shea value chain:

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

The figure 3: shows a simple Shea-nut value chain



Source: Brabeck et al. 2008.

The authors' of this particular map above is built on merely the main actors in the shea nut/butter value chain. (Abubakari Y. A, 2015). The essential processes and specific activities in the shea value chain are not mapped here in this simple chain map. Nevertheless this study enquired more deep in to the main actors in the Shea value chain map, and highlight the core processes and used flyers and detailed value adding functions to make it clearer.

CHAPTER THREE

3.1 RESEARCH METHODOLOGY

3.2 Introduction:

This chapter gives the description of the study area and presents the research design and the sampling techniques used, the data collection tools and data analysis procedure.

3.3 Study area:

Figure 4: Map of Ghana and northern region showing the study area, Kumbungu district.



Source: *Worldatlas.com*

The research was carried out in four different communities in Kumbungu districts in the Northern Region which included; Dalung, Wuba, Zangbalun and Kumbungu township. These district is well-known for high processing of shea nuts and butter. Women in the shea value chain in these areas are into groups and individuals and are using semi-automated and traditional ways of processing of the shea butter. There are also existing organizations more in to export of shea nut/butter.

Picture 12: shows the researcher first entry in to the selected communities to collect data.
Source: Author own captured 2018



There are twenty-eight (28) administrative districts in Northern region of Ghana. The Kumbungu district is among the newly constituted districts in the country. The Kumbungu district is bordered by the central Gonja on the south, Savelugu/Nanton on the east, west Mamprugu on the north and west Gonja on the west, all lies within the guinea savannah zone.

According to the Population and Housing Census (2010), the population of Kumbungu Township, is about 39,341 people. With males population covering 50.0 percent and females too representing 50.0 percent.

The District population is more youthful of 44.8%, with a small number of elderly persons of 5.4%. The total age dependency ratio for the District is 101.1, the age dependency ratio for males is higher 108.6 than that of females 94.1 (PHC 2010). The District is made up of one(1) constituency, 5 Area councils, 115 communities, 24 electoral areas, 110 Unit committee members, 34 Assembly Members: 24 Elected, 11 Appointed, 1 MP, and 1 D.C.E. Out of the total, 35 are Males and 2 Females. According to the 2010 population and housing census the total population of Kumbungu- district is 81,194 representing 49.7 male and 50.3 females with its capital at Kumbungu (GSS, 2014).The District has a total number of 4,133 households. The average household size in the District is 9.5 persons per household. Children constitute the largest proportion of the household structure accounting for 48.4 percent. Basically Guinea Savannah interspersed with short drought resistant trees and grassland. Major trees species include the Shea-nut, “dawadawa”, mango, which are economic trees and form an integral part of livelihood of the people.

The Kumbungu District has a lot of opportunities awaiting private investment; joint venture partnership between the private and the public sector. In Agricultural sector, studies have indicated that along the banks of the White Volta, irrigation farming is feasible and can take place throughout the year. The district is also noted for the production of industrial crops like 4 cotton. The District has vast area suitable for livestock production own and control by men.

Picture 12: shows livestock in the community feed by using the shea tree leaves(fodder).
Source: Author own captured 2018



The females especially migrate to Accra and Kumasi but are unable to get employment due to lack of appropriate employment skills.

3.4 Research Design:

The research approach used was mainly qualitative methods and also used little quantitative on the butter/nut price trend and kilogram measurements. Data was collected using focus group discussions, observations and in-depth semi-structured interview technique to discuss data with the existing literature. Also, a mini video showing the local Shea butter extraction process was recorded from picking of the nut till the butter was extracted and marketed. The video was edited in to a mini butter processing documentary. This video made it possible to drawing appropriate value chain map for analyses and discussion. To give in-depth representation of how Shea butter extraction influences food accessibility of women household in the Kumbungu district, two complementary qualitative methods were used, (interviews and focus group discussions). This are complementary because of two reasons, that is to say the interviews in this study provided individual perceptions of the households, and also allow the respondents the confidentiality to speak honestly on some sensitive issues concerning control of income in the household whiles the focus group discussions was used to triangulate the data by comparing the responds on the topics discussed (Challenges, opportunity, strength and weakness of the shea business) to ensure validity of the information given. Secondary data were acquired, this included collection of information from articles, journals, reports, books and from resources center in the kumbungu district office. The researcher also took one week and filmed the shea process by following the women in the processing step by step from the picking till butter was extracted and marketed. Research methodology is a process of inquiry or path by which a researcher seeks to find out answers to the research questions posed. Kumar (2005).

According to Rubin and Babbie (2005) qualitative research stresses the need to stimulate deeper understanding of the phenomenon and its subjective meanings as it happens in the natural environment. in qualitative research the researcher does not get to the field with predetermined categories of variables in which behaviour and experience are coded, rather the researcher go into the field with an open mind and this reduces the influence of preconceptions and avoids imposing preconceived categories on the respondents, Kumar (2005), therefore the need for qualitative method to ensure wide range of information from respondents. It has been argue that using more than one way of measuring a concept increases the confidence in the findings of a study, Webb *et al.* (2002).

3.5 My role in the research:

In qualitative research, the researcher's role is theoretically non-existent according to constructivist or interpretative paradigm. This is not universally the case, nevertheless; there are occasions where one may pursue an interpretative study using a quantitative methodology. No one paradigmatic or theoretical

framework is 'correct', it is a choice to determine your own paradigmatic view and how that informs your research design to best answer the question under study (Chilisa and Kawulich, 2003). This means that in a perfect qualitative study, participants act independently of the researcher as if he /she were not there (Simon, 2011). Ideal qualitative studies should be repeatable by others and under the same conditions, it should produce similar results. A qualitative researcher needs to describe relevant aspects of self, involving any biases and assumptions, any expectations, and experiences to qualify his or her ability to conduct the research (Greenbank, 2003).

In this particular study, the researcher's role was more of an etic –from an outside view, being of more an objective viewer (external). Sometimes the researcher can start as an outsider and then become a group member or can start as participant of the group and then become more objective observer later (Punch, 2006). The researcher was curious to know the reasons for women's low incomes and food insecurity in the Kumbungu district. To conduct a good qualitative research, the researcher played an important role by asking probing questions to deeper levels of the conversation, then listens attentively and thinks. An effective qualitative researcher tries to build a picture using ideas and theories from a wide variety of sources (Greenbank, 2003). As part of the role, the researcher took critical notice and built rapport by cooperating with respondents, making good entering of the research area (through the assembly man), used reflexivity and made self-disclosure during the data collection.

3.6 Sampling:

Purposive, simple random and snowballing sampling techniques were used to select out communities and respondents. The district was grouped into four zones that is; the Northern Zone, Eastern Zone, Western zone and the Southern zone. Then purposive sampling and snowballing were used to choose out respondents from four communities that are known to totally involve in Shea butter extraction business. Also simple random sampling was used to sample out the four communities for the data collection. Also, two communities were selected based on the presence of shea processing groups, while the other two communities were selected based on the non-existence of processing group (individual processors). Random sampling techniques were used in the selection of processors working in groups while snowball sampling technique was used in selecting individual processors who are not in groups. The sampling was based on the three main actors in the shea butter business that is 21 respondents from shea nut pickers, 20 from butter extractors and 9 from traders/exporters, which makes a total respondents of 50. Members from the focus group discussion were sampled by making the groups choose six (6) women representatives from four different groups and also randomly selected another six individual processors in the four different communities totaling to 12 members.

3.7 Data collection:

Both secondary and primary data were used. Secondary data sourced from the district assembly was books, and articles written on shea nut and also NGO's reports involving women empowerment through Shea butter extraction, while the primary data were mainly information collected from semi-structured interview, observation and focus group discussions. The questions for interview were structured to fit into the three major value chain actors in the Shea butter business thus; the Shea nut producers, the butter processor and the butter traders/exporters. Data for the study was collected by the researcher and three assistants. The assistants were taken through the questionnaire to help them understand questions in the context of the research questions and objectives. The researcher and the assistants translated each question from English into the local language spoken there (Dagbani) and a common translation for each question was adopted to produce the appropriate responses. The research questionnaire was tested and corrections of certain common mistakes were addressed. The three assistants were all university graduates. During the focus group discussion, the researcher facilitated the discussion by introducing the assistant and his purpose (recording of the discussion) and himself as the facilitator while he allowed the participants to introduce themselves. Participants were asked to mention some challenges, opportunity, strength and weakness of the shea business and was discussed. The researcher made an observation list and observed the following while on field;

- observed the actors who are in and for the Shea butter value chain.
- observed body language of my respondents during interviews.
- observed the presence of other supporter and NGOs who which are involve in women empowerment through shea butter.

- observed how the Shea nut is picked and how is processed in to Shea butter. .
- observed whether women were engaged in other income activities than the shea butter extraction.

Data collected was on;

- Personal details
- Occupational details
- Challenges and weakness
- Opportunities
- Income and expenditures
- Profits
- Processing procedure
- Accessibility to raw materials
- Technology in processing butter (this shall be both indigenous and foreign technology)
- Seasonality of the business
- Household income and expenditures
- Other sources of income to augment income from Shea business
- Role of the women in household
- The role of the men in the household
- The role of the children in the household
- Food accessibility
- Marketing
- Food availability

3.8 Data Analysis:

The data was mostly qualitative responses to open-ended questions and so data collected was organized, matched, and summarized as themes, categories and proportions calculated. The quantitative data collected in terms of butter price per kilo (kg), quantity of nut produced in the past years was analyzed and tested of significance for differences in proportions chi-square of SPSS version 16.0 was employed. Results was presented in graphs, tables and charts.

4.0 CHAPTER FOURE

RESULTS

4.1 Gender and Socio-Economic Distribution of Respondents:

Table 3: Distribution of Respondents by Age, Sex, Occupation, Years of Experience shea work and Educational Level.

	Class Level	Frequencies	Percentages	Chi-Square	P-value
Sex	Male	2	4	42.32	0.00
	Female	48	96		
Age	15-34years	18	36	14.68	0.01
	35-54years	27	54		
	55+years	5	10		
Occupation	Pickers	21	42	5.32	0.07
	Butter extractors	20	40		
	Traders	9	18		
Years of Experience	1-5years	4	8	45.2	0.00
	6-10years	7	14		
	11-20years	6	12		
	20+years	33	66		
Educational Level	No formal education	37	74	93.20	0.00
	Primary education	7	14		
	JHS/JSS	3	6		
	SHS/SSS	2	4		
	Tertiary	1	2		

Marital status	Married	45	90	32.00	0.00
	Widow/Spencer	5	10		
Household size	Male	192	47		
	female	218	53		

The distribution of sex, age, and years of experience, occupation, marital status, educational level and household size of respondents is shown in table 1 above. Among the respondents females were more than males ($X^2=42.62$; $p<0.00$). Majority of the respondents were between the ages of 35 to 54 years while the least were 55+ years ($X^2= 14.68$; $p<0.01$). In the occupational distribution majority of the respondents were in to picking of nut and processing it into butter while the least were into nut trading ($X^2=5.32$; $p<0.07$). Most of the respondent had long years of experience in the shea business 20 year and above ($X^2=45.2$; $p<0.00$). Significantly larger number of the respondents had no formal education followed by primary education ($X^2=93.20$; $p<0.00$). About 90% of the respondents were married while only 10 were widows or Spencer ($X^2=32.00$; $p<0.00$). Majority of the house hold members of the respondents were females about 53% while the males were 47%. Also 96% of the respondents were females while 4% were male who are either in the butter and nut export or secretaries to women groups.

4.2 A crosstab table showing the relationship between socio-economic parameters of respondents.

Table 4: crosstab table showing the relationship between socio-economic parameters of respondents.

	Chi-Square	Asymp. Sig.		Value	Approx. sig
Sex * Educational level	14.658	0.005	Phi	0.541	0.005
			Cramer's V	0.541	0.005
			Contingency Coefficient	0.470	0.005
Sex * Age	0.328	0.849	Phi	0.081	0.849
			Cramer's V	0.081	0.849
			Contingency Coefficient	0.081	0.849
Sex * Marital status	231	0.630	Phi	0.68	0.630
			Cramer's V	0.68	0.630
			Contingency Coefficient	0.68	0.630
Sex * Years of experience	15.278	0.002	Phi	0.553	0.002
			Cramer's V	0.553	0.002
			Contingency Coefficient	0.484	0.002
Sex * Occupation	9.491	0.009	Phi	0.436	0.009
			Cramer's V	0.436	0.009
			Contingency Coefficient	0.399	0.009
Occupation * Educational level	9.204	0.325	Phi	0.429	0.325
			Cramer's V	0.303	0.325
			Contingency Coefficient	0.394	0.325
Occupation * Age	2.428	0.667	Phi	0.220	0.667
			Cramer's V	0.156	0.667
			Contingency Coefficient	0.215	0.667
Occupation * Marital status	1.208	0.547	Phi	0.155	0.547
			Cramer's V	0.155	0.547

Contingency Coefficient	0.154	0.547

Table 4 above shows a relationship between (sex, occupation) and (sex, marital status, educational level). From the table above we can confidently say that, there is a relationship between sex and educational level ($X^2=14.658$, $P=0.005$), sex and year of experience in business ($X^2=15.278$, $P=0.002$), sex and occupation ($X^2=9.491$, $P=0.009$). While the rest showed no relationship.

4.3 Household Wealth:

Table 5: Household wealth strength of respondents.

Asset		Frequencies	Percentages
Electricity	Present	11	22
	Absent	39	78
Radio set	Present	30	60
	Absent	20	40
Farm land	Present	44	88
	Absent	6	12
bicycle	Present	35	70
	Absent	15	30
Motor king	Present	9	18
	Absent	41	82
Savings	Present	33	66
	Absent	17	34
Lorry or Tractor	Present	1	2
	Absent	49	98
Mobile phone	Present	39	78
	Absent	11	22
Motor cycle	Present	18	36
	Absent	32	64
Sheep or goats	Present	27	54
	Absent	23	46
Cattle or donkey	Present	8	16
	Absent	42	84
poultry	Present	36	76
	Absent	12	24

Table 5 above describes the wealth strength of the respondents household, it can be seen that majority of the respondents have no electricity in their villages/homes, have no lorry or tractors and cattle or donkey but the rest are present in their household. Most of them have assets (sheep, goat and poultry) which they usually feed with shea tree leafs and shea butter byproduct. They sometimes sell this livestock to get liquid cash in times of food shortage. Again, majority of the respondents have some form of savings either at the bank or a locally informal arranged form of saving known as “Adaka billa” or “Susu” from their shea business income.

4.4 Shea Nut Accessibility:

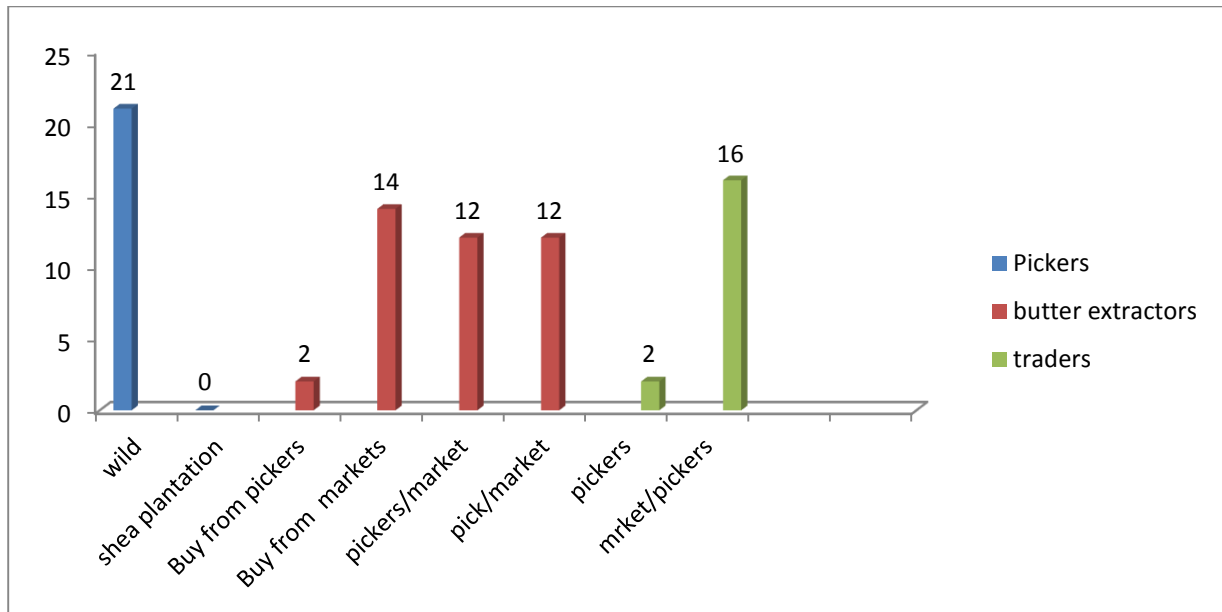


Figure 5: A bar chart showing where rural women access shea nut.

The bar chart above is showing where rural women in the shea business access shea nut, it can be seen that all the pickers pick shea nut from the wild, none has shea trees plantation or even pick shea nut from a shea cultivated plantation(farm). The shea nut picked is sold to either the traders or the butter extractors at the local market or in their homes. While the butter extractors either pick shea nut by themselves or buy from the pickers and the local market. The traders also buy from the pickers as well as from the local market and also sell to exporting companies who then buys and export shea nut and butter to the international consumers.

4.5 Seasonal Availability and Shortage of Shea Nuts and Butter:

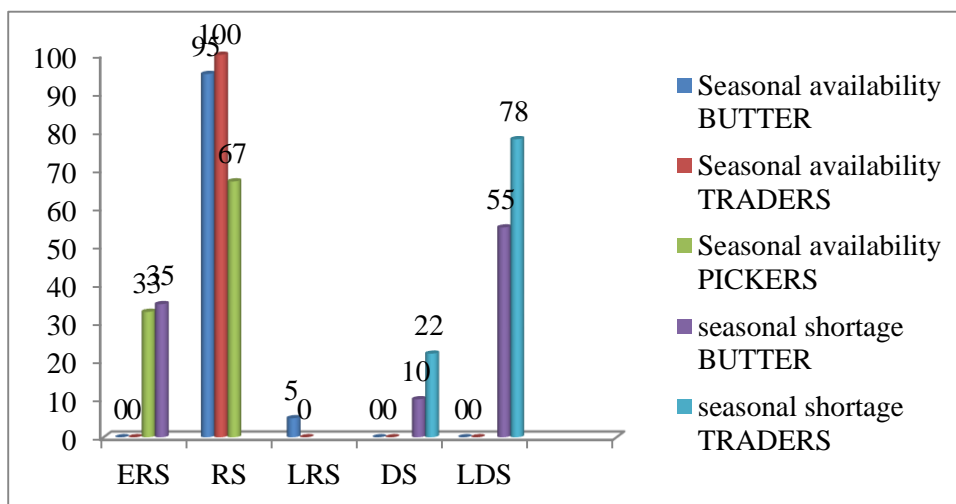


Figure 6: Shows seasonal availability and shortage of shea nut:

ERS (Early raining season that is April to June), **RS** (Raining season that is July to September), **LRS** (Late raining season that is October to November), **DS** (Dried season that is January to February), **LDS** (March)

The bar chart above is describing the seasonal availability and shortage of shea nut in the District. It can be seen that, shea nut is not readily available all year round; from the figure shea nut is slightly available in the early raining but readily available in the raining season. Shortage of shea nut is experience during the dried season but becomes severe in the late dried season. Whiles in the late raining season some few respondents experience shortage of shea nuts starting from the late raining seasons.

4.6 Demand for shea nuts and butter:

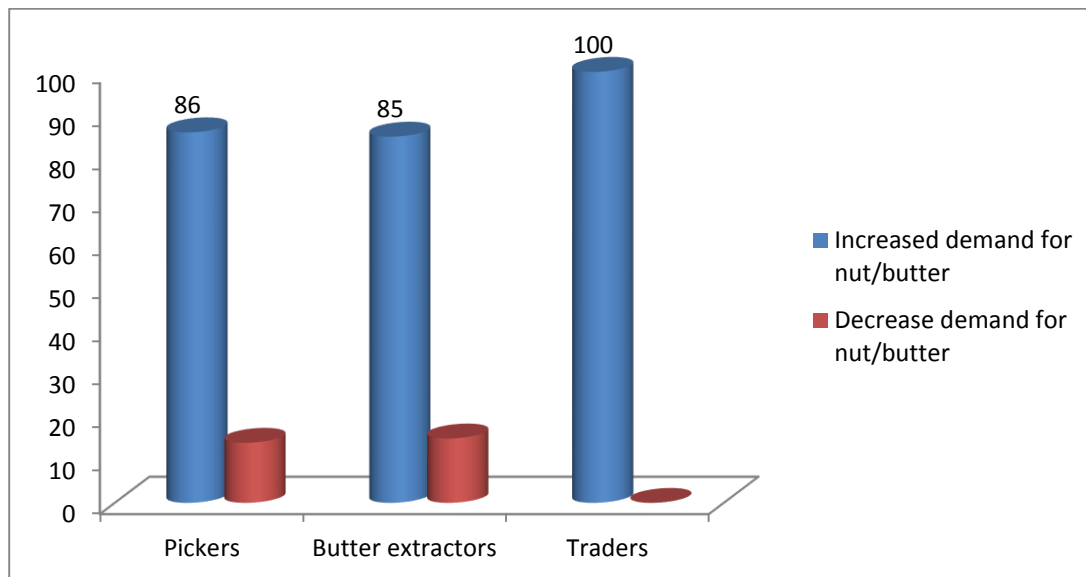


Figure 7: Showing increased in demand for nut and butter in local market.

Majority of the respondents or actors (pickers, butter extractors and Traders) agree to the fact that there is increase in demand for both shea nuts and butter. The chart above shows clearly the increase in demand for both shea nut and butter. All the traders, 85% of the butter extractors and 86% of the pickers confirm the fact that shea nut and butter has increased over the past years.

4.7 Decreasing Yield/Quantity of Nuts:

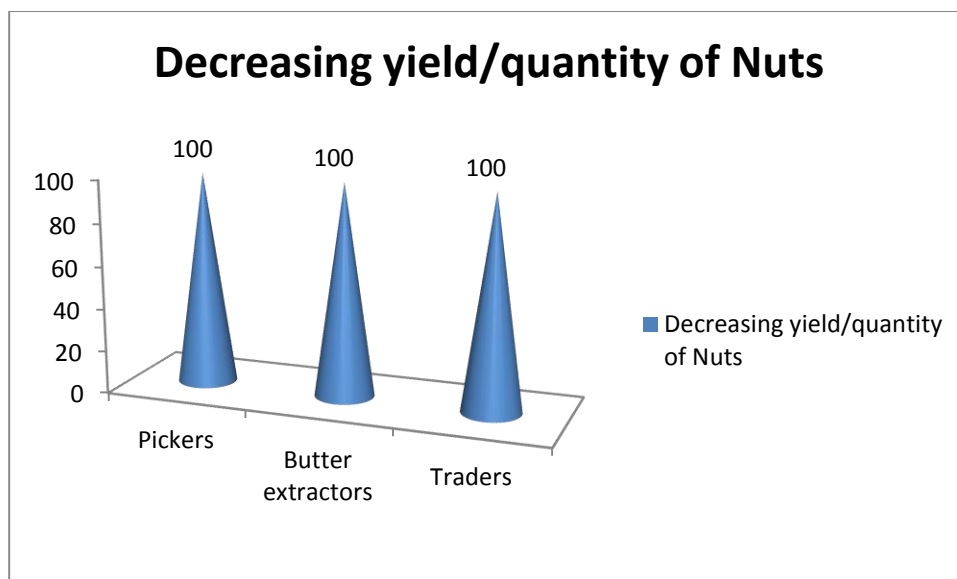


Figure 8: Shows the decreased quantity of shea nut.

All the three actors (Pickers, Butter extractors and Traders) agreed that, the yield/quantity of shea nuts harvested and sold at the local market have decreased. Pickers are harvesting less each year, there is less quantity going in to the market and therefore decreased amount of butter extracted each year,

4.8 Trend of shea nut picked, processed and traded:

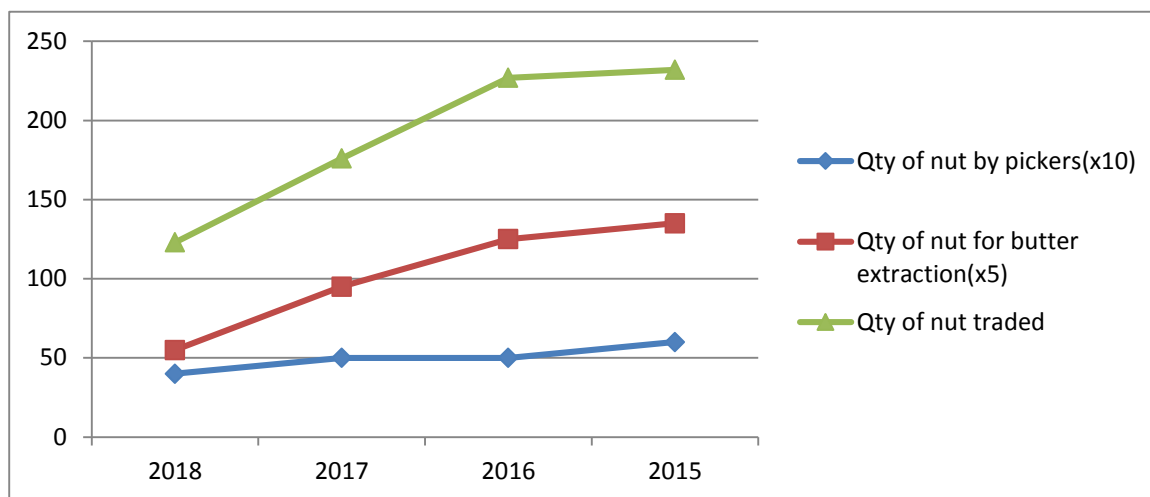


Figure 9: Showing the trend of shea nut picked, processed and traded.

The figure above is describing the trend of shea nut picked, processed and traded from the year 2015 to 2018. It can be seen that, the quantity of shea nut harvested by the pickers is gradually decreased across the years while also the quantity of nut processed into butter by the extractors is also decreasing from 2015 to 2018. Again quantity of shea nuts traded by the Traders is also decreasing sharply over the pasted years. The decreasing yield/quantity of nuts harvested by the pickers has affected operations of all the actors in the value chain.

4.9 Trend of prices of nut and butter on the local market:

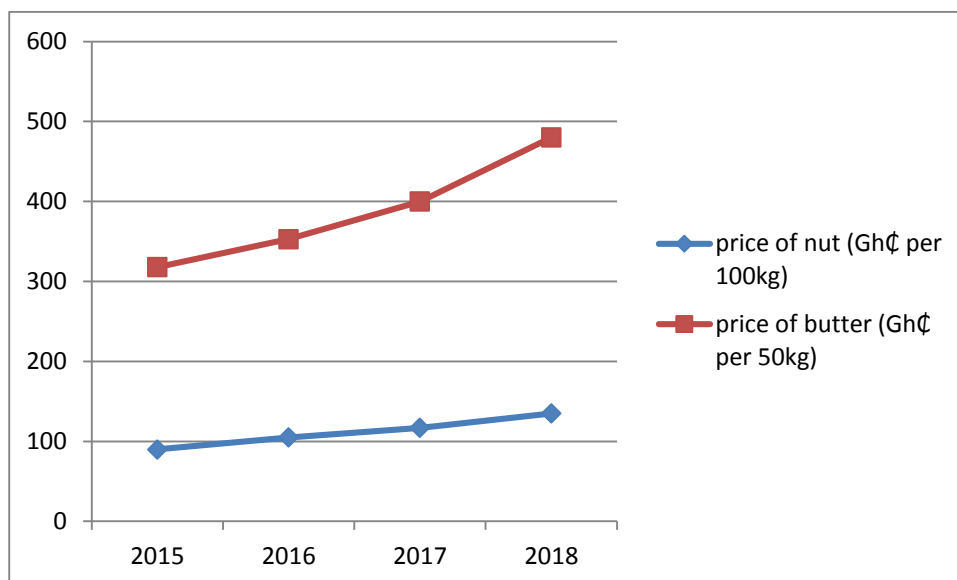


Figure 10: Showing the trend of prices of nut and butter on the local market.

The above chart is describing the prices of nuts and butter produced over the year 2015 to 2018, the prices of nuts and butter can be seen to be increasing over the past years. Prices of shea nut have increased over the year sharply while there is a steady increase in the price of butter over the pasted years.

4.9 Input Cost of Processing Nuts and Butter:

Table 6: Showing the variable cost incurred in processing 100kg nut and 50kg butter by rural women.

Inputs	Nut processing	Butter processing	Traders
	Cost per bag (100kg) (Gh¢)		
Transport	5.5	5.35	5
Fire wood	11.94	12	X
Water	3.22	2.85	X
Milling and crushing	X	13.5	X
Roasting	X	2.5	X
Labour	11.39	10.35	X
Storage			7.20
Total Cost	32.05	46.55	7.25

The input cost of processing nuts, butter and trading was estimated for all the actors that is; the pickers, butter extractors and Traders in the above table. All estimations were done with all the actors' participation which shows that the butter extractors incurred high input cost of 46.55 total mean value as against 32.05 and 7.25 for the picking and trading respectively. The estimations enable the calculation of the incomes/Profit margin of the various actors. Values used for this estimation are mean values from all the respondents.

4.1.0 Quantity of Nuts Picked, Processed and Traded:

Table 7: Showing the quantity of nuts picked and nuts processed in to butter and nuts traded

Year of production	Qty of nut by pickers (bags)	Qty of nuts for butter extraction (bags)	Qty of nut traded (bags)
2018	4	11	123
2017	5	19	176
2016	5	25	227
2015	6	27	232

Table 4 gives quantity of nuts picked by pickers, quantity of nuts processed into butter by butter extractors and nuts traded or sold by the traders from 2015 to 2018. The quantity of nuts by the various actors was used in the estimation of the income of the various actors.

4.1.1 Estimations of income earn by various actors:

Table 8: Shows the estimation of income earn from shea business by the various actors

	Pickers (Nut producers)	Totals Gh¢	Butter Extractors	Totals Gh¢	Traders	Totals Gh¢
Income						
			2018 production year Gh¢			
Sales of nuts/ Butter	4× 135	540.00	366.66 × 9.6	3,520.00	123×185	22,755.00
G.Total Income		540.00		3,520.00		22,755.00
Expenditure						
INPUT	4× 32.05	128.2	11×46.55	512.05	5×123	615.00
			135×11	1485	135×123	16,605.00
Storage					720	720
G.Total Expenditure		128.2		1,997.05		17,940.00
Profit Margin		411.8		1,522.95		4,815.00

NB: 33.33% of the nut is butter and 1 bag of nut is equivalent to 100kg (source from survey); this implies that 11 bags (1100kg) process into butter in the year 2018 by butter processors will give 366.66kg of butter, this and the input cost in table 3 and the quantity of nuts picked, processed and traded in table 4 were the variables for the estimation of the income of the various actors. It is clear from the table that, the income of traders has rocket passed that of the pickers and the butter extractor while the butter extractor's income is about six times more than that of the pickers. The table also indicates the marginal profit (not tax). As like the incomes, a similar trend can be seen in the profit earn from the shea business by the various actors. The ratio of the profit of pickers to butter extractors is 1:6.5 while the ratio of the pickers to traders is 1:12.

4.1.2 Observation of the value chain for shea Butter in the district in 2018

Source: Author's Construct, 2018.

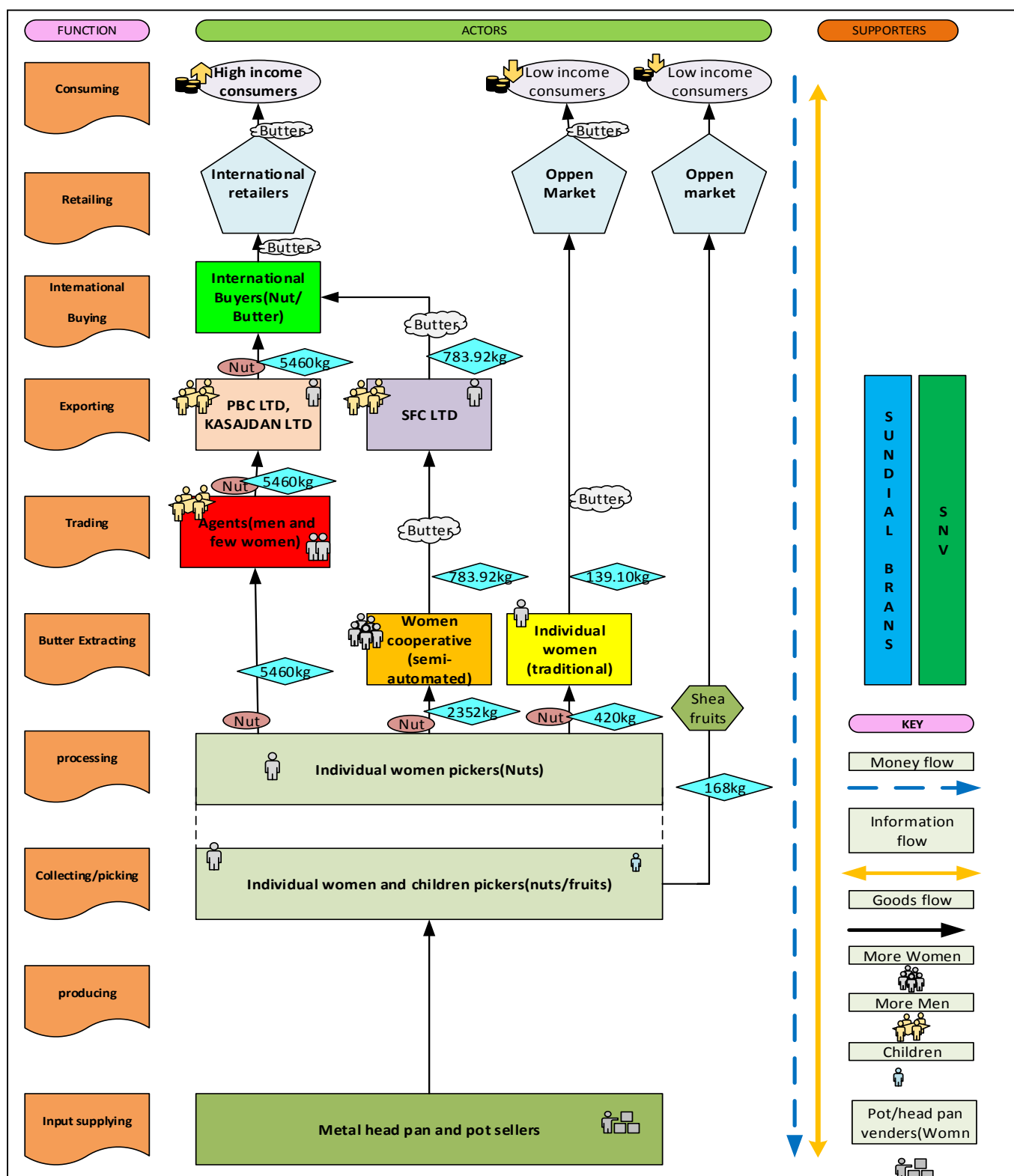
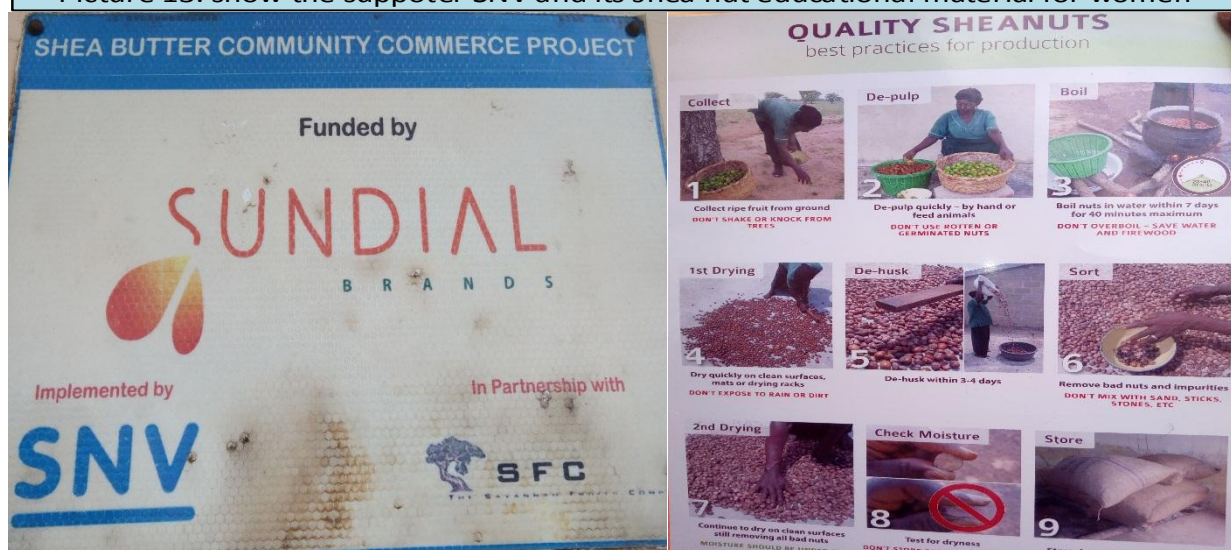


Figure 11: Shows shea nut/butter value chain in the kumbungu district.

The above diagram is a value chain map showing how the flow of shea nut, fruits and butter move within the actors, their functions and the quantities in kilogram of nut flow and butter. This was design taking in to consideration of all the essential processes that goes in the shea business at Kumbungu district unlike the map **figure3** that has limited information. During the group discussion, interview of respondents and observation, information gathered indicated that, as at 2018 the mean value calculated for quantity of shea nut/fruits picked was 4bags per each of the 21 respondent who are in to picking, according to the

result in **table 5**. Also, based on **table 4** in the result, one bag is equal to 100kilogram. Meaning the total average quantity of shea picked by the 21 respondents was 8400kilograms, which 2% (168kg) was sold as fruits by children to low income consumers in the open market, 5%(420kg) of the nut was sold to individual traditional butter extractor, 28%(2352kg) of nut was sold to women who extract butter in groups, while 65% (5460kg) quantity of nut was sold to shea nut buying agents who are dominated by men. Base on **table 6** information, 33.3% of the nut contains the butter, meaning 33.3% of 420kg of nut will give the individual butter extractors 139.10kg of butter which is sold in the open market for low income consumers. The women group extractors also produced butter from the 2352kg of nut to get 783.92kg of butter and sold to a local buying company call (SFC)Savannah Fruit Company Ltd who then export to international buying company(SUNDIAL brands). The 5460 kg of nut bought by the agents are sold raw to exporting companies (PBC Ltd and Kasajdan Ltd) that could be used to produce 1819.8kg of butter, then PBC Ltd and Kasajdan Ltd export the raw nut to international buying company to produce butter for high income consumers. This was design base on the information gotten from the focus group discussion, interviews and observations during the field work. In the chain women was dominating most of the functions which is crucial for the survival of the chain and sustainability of the shea butter business and income of the rural women. In the district, the main enablers (supporters) for the chain are SNV and SUNDIAL Brands which are in the chain and for the chain. The activities of this two supporters are limited to only shea butter extraction women groups but not the other actors.

Picture 13: show the suppoter SNV and its shea nut educational material for women



4.1.3 Value Share:

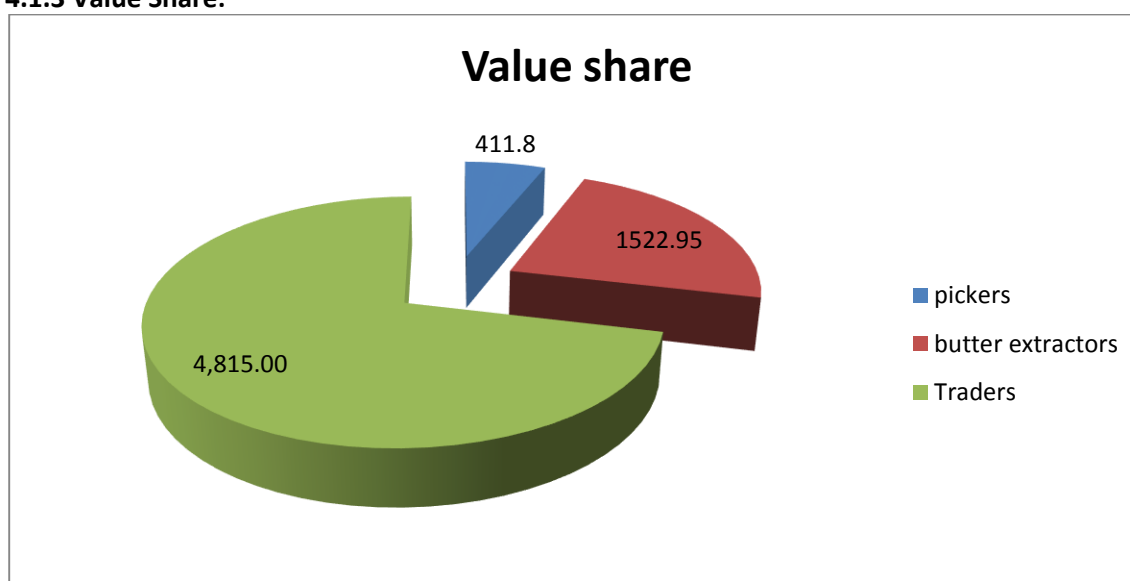


Figure 12: Pie chart showing the value share of the various actors.

The pie chart above is describing the value share of the various actors involve in the shea business at the local level. This value share distribution here is based on the profit margin calculation in table 8 above. It is obvious that, a bigger part of the value share (71%) profit is taken by the traders who have fewer

members with lower input cost and dominated by men in their trade as compared to the other actors in the chain. followed by the butter extractors with about 22.5% profit of the value share, the least are the pickers who takes about just 6% profit of the share with high input cost and dominated by rural women. This is very evident that, the value share is skewed to the traders.

4.1.4 Food Shortage:

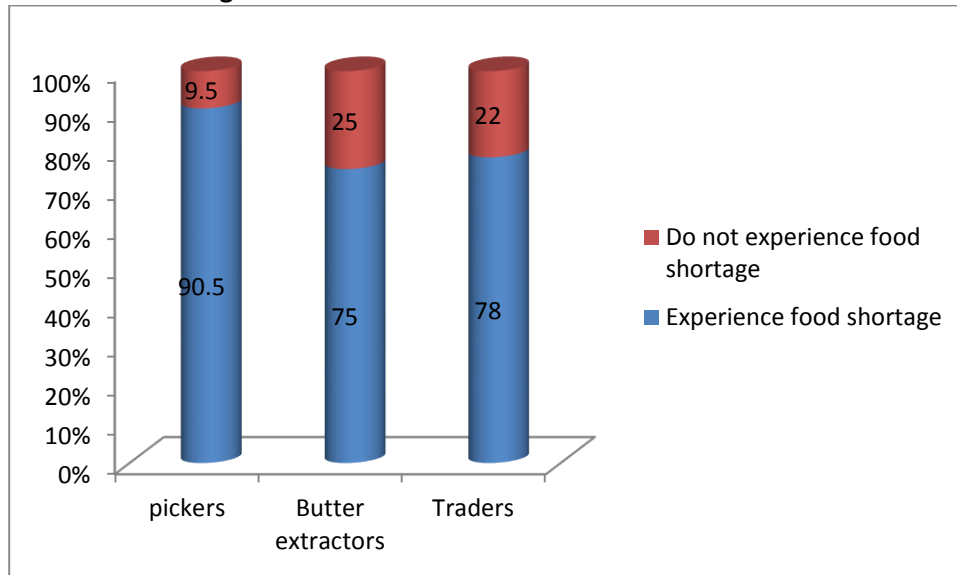


Figure 13: Showing respondents who experience food shortage within the year.

It is clear from the above figure that all the respondent experience food shortage within the year but majority of the pickers experience food shortage more than the butter extractors and the traders. Very few respondents do not experience food shortage. The pickers experience the shortage because base on figure 11 and 12 they earn less profit share that gives them less income to access adequate food in the lean season. Food become very expensive for the traders to buy during the planting period thereby making them to reduce the quantity and variety of food they eat in the household. Base on figure 11 the butter extractors usually get less share of nut to produce butter, as a result they produce and sell comparatively low volumes of butter that gives them low income to access adequate food in the lean season.

4.1.5 Seasons of Food Shortage:

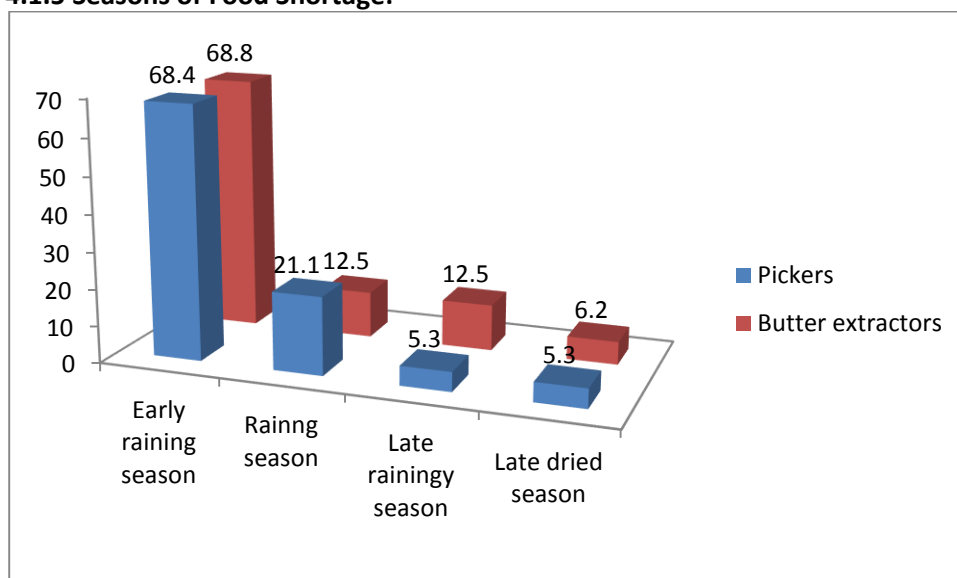


Figure 14: Showing seasonal food shortage experience by rural women in shea business.

The chart above is showing seasonal food shortage among women involved in shea business. It can be seen that, majority of the respondent experience food shortage during the early raining season that is; April to June, just a few experience food shortage in the raining, late raining and late dried seasons.

4.1.6 Livelihood strategy:

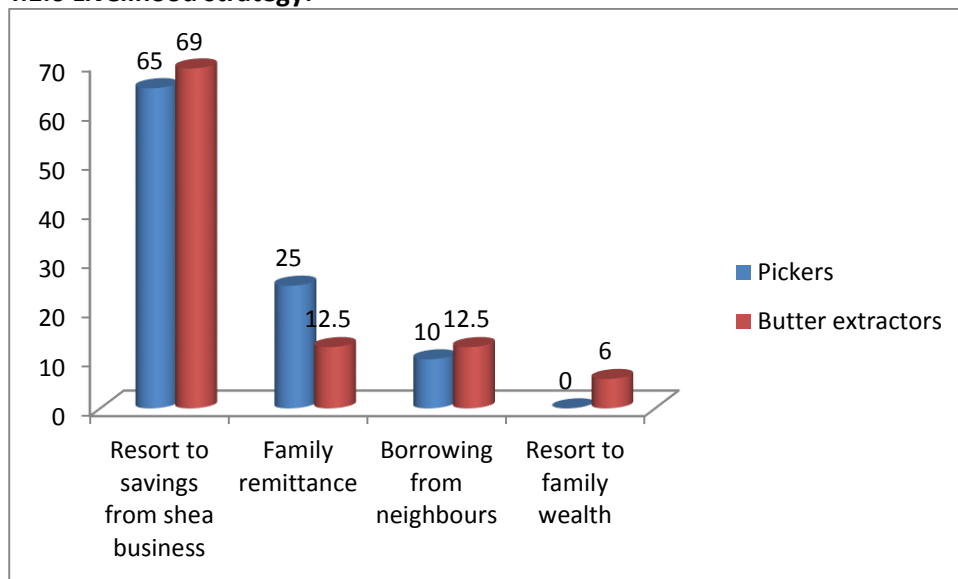


Figure 15: Shows the livelihood strategy adopted by rural women in shea business.

The above figure is showing how women in shea business adopt to food shortage, It can be seen that the livelihood strategy adopted by most women is to rely on the savings they have made from the income from the shea business, while just a few rely on family remittance, borrowing from neighbours and resorting to sales of family wealth e.g. sheep, goat or poultry.

4.1.7 Other Income from the extraction process:

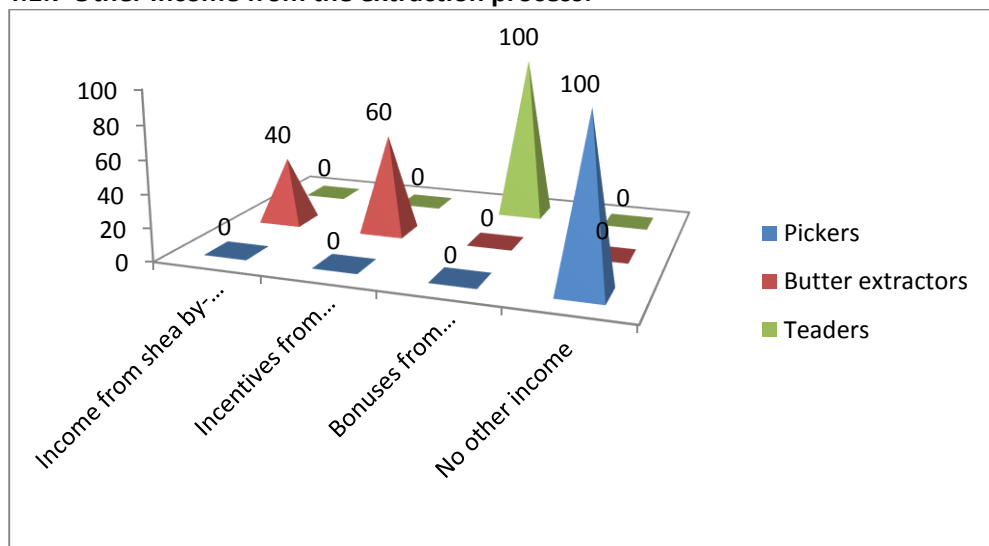


Figure16: Showing other income earn from shea business.

The chart above is describing other income gotten in the shea business apart from the normal nuts and butter sales, from the chart pickers have no other income gotten from the shea business apart from the sales of the nuts. Butter extractors get income from sales of by-products (shea waste) and also get some support from organization that buys butter in a form of incentives, 40% of the respondents sale the shea waste for income while 60% of the respondent get some form of incentives from organization such as NGO's and other companies that buy butter from them. International buyers of shea nuts also gives

premium and bonuses to Traders (middlemen), all the respondent (Traders) get the premium and bonuses from international buyers.

4.1.8 Membership of Cooperatives or Informal Women Group:

Table 9: Showing membership of the various actors in cooperatives/informal women groups

	Pickers		Butter extractors		Traders	
	Frequencies	Percentage	Frequencies	Percentage	Frequencies	Percentage
Membership of cooperatives /informal women group	18	86	19	95	0	0
Non-membership of cooperatives /informal women group	3	14	1	5	9	100

The table show membership of the various actors in cooperatives or informal women groups, 86% of the pickers belong to informal women groups where they save money locally and to access it when they are in need. 14% of the pickers do not belong to any cooperatives or informal women group. Majority of the butter extractors (95%) belongs to cooperatives while just about 5% of the butter extractors do not belong to any cooperatives or women group. None of the traders belong to any cooperatives or informal women groups.

CHAPTER FIVE

Discussion of results

5.1 Introduction:

This chapter presents the discussion of the results using major findings from the study. The discussion examines how key findings have agreed with or are found to be at variance with available literature presented in chapter two of this study. The discussion is done in line with the specific objectives of the study.

5.2 Sources of Shea nuts for Shea butter extraction among rural women:

The shea butter business exists because people who engaged in it had access to the raw material. The study examined how accessible rural women in the study setting had access to the shea nuts for shea butter extraction. From the results, it was revealed that most of the respondents representing 42% indicated that their major source of shea nuts was from the wild. This finding from the study is similar to the study done by Theophilus, Kodua and Mary, (2018) where women who were engaged in the shea butter extraction business had their major source of shea nuts from the forest. This similarity in terms of the study findings with these two results from different regions but in one country, Ghana could be due largely to the fact that, the two studies both sampled mostly rural women and perhaps could also be due to the simple reason that, by geographic location, there are all found in the northern part of the country. In that part of the country, individuals who embark on wild fruits hunting especially in the raining season do come home with shea nuts. This perhaps could explain why these people were found to have been depending on the forest or wild for their major source of shea nuts. The results further revealed that, 32% of the rural women engaged in the business had access to the shea nuts in the market. This finding from the study concurs with the study done by Rousseau et al. (2015) where women who were engaged in shea butter extraction business had access to the shea nuts in the market. Shea nuts are found in the market normally by individual pickers and traders. The pickers of the shea nuts usually do so by bringing small quantity of the commodity into the market for sale whilst the traders also depend on women who harvest shea nuts in large quantity for sale.

During the off season, the rural women again go back to the traders to purchase the shea nuts for shea butter extraction. This is because, the shea nut trees do not fruit all the season and the community members were also found not to be engaged in an aggressive shea nut trees plantation. Even in the study community, shea nut trees were not found in large numbers. Thus, the Agricultural Extension Officers should be resourced to provide more education to the community members on the need to plant shea nut trees.

5.3 How rural women use the income from Shea butter extraction in the households

Shea nut trees provide not only an important support for sustainable rural development but also away for livelihood support and maintaining livelihood security for the rural people. Even through, they are not the main source of income and employment for rural people, they play significant role in the support of livelihood security of the rural poor. Base on finding on figure 15, table 5 and the literature review states that, According to the Stichting Nederland's Vrijwilligers (SNV) study (2006), indicate that more than 600,000 women in Northern Ghana depend on incomes from shea butter and other shea-related products for their daily sustenance. Another literature states that Over 90% of women were involve in collecting the nut (Sunderland and O.Ndoye, 2004). Therefore it was clear that livelihood diversification, food security, household asset accumulation, employment, income generation and financial savings are some of the opportunities for rural women who were engaged in the shea butter extraction business, they gain all this for being in Shea butter business. Most rural women had access to shea nuts and used them for butter extraction at the household level which gave them an income for their daily activity. The results revealed that, on average rural women who were engaged in the shea butter extraction earned Gh¢1,522.95. This finding from the study agrees with the study done by Dossou and Tanko (2017) where shea butter extraction was identified as good resource in the household level. The use of the income generated from the shea butter extraction business is used by the rural women for varied purposes. Key

among them has been the issue of rural women using the money to purchase items for the household. Farmers should be encouraged to protect and plant Shea trees on their farms as a way of increasing the availability of the shea nuts in the study community.

5.4 Ways rural women could generate income from Shea butter extraction business:

The study also tried to access ways by which rural women could generate income from engaging in the shea butter extraction business. The income that might be gotten from the business could be the products that rural women could make from the shea nuts apart from the shea butter extraction. From the results, findings showed that, 40% of the respondents had access to income from shea by products.

This finding from the study agrees with the study done by Schreckenberg (2004) where women got money from the by-products of shea by-products. This could be due to the reason that those people who used the shea butter could perhaps use the shells for firewood. Elsewhere in the world, women who engaged in shea butter extraction business used the by-product for other activities. They depend on it so much that, they generate income from it. The results also showed that, 38% of the respondents who were shea butter extractors were involved in the informal Women Group. This finding from the study concurs with the study done by Djossa (2008) where women engaged in shea butter extraction business were members of the cooperative union. The reason could be due to the fact, rural women who were involved in the cooperative union had access to support in the form of money.

5.5 Causes of household food insecurity among rural women in Shea butter extraction business:

Food accessibility could be effective in accessing how rural women were engaged in the shea butter business food availability at the household. From the results, it was showed that, 69% of the shea butter extractors explained that they used the money they earned from the business to save so they could use it to buy other things for the business and food for the family. Elsewhere rural women engaged in the business spent the money in buying other things for the household. The findings also showed that, 68.8% of the respondents indicated that they usually did not have access to food in the late raining season. This could be due to the fact that, mostly during the late raining season, the shea trees begins to fruit and may not be available for rural women to use for butter extraction which may aid them to generate income for the household.

However, from the results majority of the women engaged in the shea butter business had ever experienced food shortage. This could be due to the fact the shea butter extractors were directly using the traditional method of processing the shea nuts into butter. Unlike shea nuts, which can be bought and then stored for relatively long periods, shea butter is normally bought when there is the need.

Besides, the rural women were also involved directly in the sales of the butter in the open market to people with low income status. It is important to state that, one component of food security involves the holding of adequate reserves, at the household and community levels to ensure food availability, given the vagaries of weather and other production-related problems. Adequate reserves, properly managed, reduce the need for food embargoes as was seen during the sudden increase in food prices in Ghana.

5.6 Household Wealth:

The study assessed the wealth index of households at the study place. Few items were listed and respondents were asked to indicate whether they existed at the household level. This was to basically make inference from the list in terms of their wealth status. From the results, it was showed that, one common asset that was the farm land availability for respondents to farm. It was also showed that, the least asset at home for respondents to use was the availability of a tractor for ploughing. This finding from the study is not surprising since the study area was relatively a rural setting and households could not have afforded to buy a tractor with their income. The items used to cross check as households assets, few were electricity, availability of mobile phones, bicycling among others.

5.7 Relationship between social-economic parameters:

In table 2, sex and educational level showed a strong relationship ($X^2=14.658$, $P=0.005$). In the rural certain education is centered on the boy, girl child education is not a priority. This explains why majority of the women had no formal education but all the men had a form of formal education.

Again, relationship between sex and years of experience in the business was significant ($X^2=15.278$, $P=0.002$). Shea nut and butter business is known to be “women” job for ages, women have dominated this business for a long time not until recent times that men start to be involved in the business and so much of the experience lies with the women. Women are more experienced than the men.

The results also showed confidently a strong relationship between sex and occupation ($X^2=9.491$, $P=0.009$). The occupations were either pickers of nuts, butter extractor or traders, majority of women were involved in all the occupations while just few men were into the trading of the nuts. The shea business is known to be a female job the reason for the relationship.

5.8 Shea Nut accessibility:

The respondents indicated where they were getting their sources of the nuts from. It was showed that, majority of the pickers got it from the wild whilst the butter extractors got the shea nuts from the market.

5.9 Seasonal availability and shortage of shea nuts and Butter:

From the results, it was showed that, nearly all the respondents said the availability of the shea nuts was mostly found in the raining season especially during the early rains. This is usually the time for most trees to fruits and hence that could explain the reasons why they were enough access to the fruits. It was also showed that, a good number of the shea nuts were available to respondents only when the pickers get access to the shea nuts.

5.1.0 Demand for shea nuts and butter:

Majority of the respondents or actors (pickers, butter extractors and Traders) agree to the fact that there was increase in demand for both shea nuts and butter in the study community. One economic value of the shea tree is the fact that, people eat the fruits whilst the shea nuts is used for the butter extraction. This could possible explained why the demand for the shea nuts mostly among women who used them at the place was considered viable. The findings also showed that, all the three actors (Pickers, Butter extractors and Traders) agreed that, the yield/quantity of shea nuts harvested and sold at the local market have decreased. As projected on the findings, the quantity of shea nut harvested by the pickers is gradually decreased across the years while also the quantity of nut processed into butter by the extractors is also decreasing from 2015 to 2018. Again quantity of shea nuts traded by the traders is also decreasing sharply over the past years. The decreasing yield/quantity of nuts harvested by the pickers has affected operations of all the actors in the value chain. However, the prices of shea nut have increased over the year sharply while there is a steady increase in the price of butter over the pasted years.

The results further showed that, the income of traders has rocket passed that of the pickers and the butter extractor while the butter extractor's income is about six times more than that of the pickers. The ratio of the profit of pickers to butter extractors was about 1:6.5 while the ratio of the pickers to traders was about 1:12. This value was determined from the income generated from the major actors in the study area.

5.1.1 Value share:

It is obvious that, a bigger part of the value share (71%) is taken by the traders followed by the butter extractors with about 22.5% of the value share, the least are the pickers who takes about just 6% of the share. This is very evident that, the value share is skewed to the traders. It is clear from the above figure

that all the respondent experience food shortage within the year but majority of the pickers experience food shortage than the butters and the traders. Very few respondents do not experience food shortage. It can be seen that the livelihood strategy adopted by most women is to rely on the savings they have made from the income from the shea business, while just a few rely on family remittance, borrowing from neighbours and resorting to sales of family wealth e.g. sheep, goat or poultry. The results also showed that, butter extractors get income from sales of by-products (shea waste) and also get some support from organization that buys butter in a form of incentives. All the respondent (Traders) get the premium and bonuses from international buyers. Majority of the butter extractors (95%) belongs to cooperatives while just about 5% of the butter extractors do not belong to any cooperatives or women group. None of the traders belong to any cooperatives or informal women groups.

CHAPTER SIX

Conclusion and recommendations

6.1 Introduction:

The chapter presents the conclusion and recommendations of the research where necessary for stakeholders and other well-wishers in the shea butter extraction business. Also, reflection on the study is explained in the chapter.

6.2 Conclusion:

The study showed that, majority of the respondents was females due to their dominance in the shea butter extraction business in rural area like the study district (kumbungu). The findings as presented in this study showed that the shea butter extraction business as engaged by women was difficult and time consuming 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 shea nut business in the study area act as either traders or secretaries to women groups which had much income than the women who are directly involve in 99% of the processing work. The study revealed that, there was no policy regulation on shea butter extraction business in the study place and traders took advantage of the weakness in the system to make profit at the expense of the rural women who were engaged in the business. The Savannah Fruits Company Limited and others organizations such as SNV and SUNDIAL were involved in assisting only women groups in the shea butter business at the study place which increases the skills of women and quality of butter leading to improved incomes of the women in groups.

The income status of women involved in the shea butter extraction groups was in a way improved which they said assisted them to provide food for their households in times of the lean season in the year, although the other individual women who are not in groups still faced low quality of shea butter which makes it very difficult to get adequate income from the business to access food during the lean season. Thus, the shea butter extraction business among women was a form of a livelihood strategy against worst forms of poverty and food in-accessibility that might lead to acute food insecurity. They was a new knowledge observed, that women in groups get incentives and also sell the byproduct for extra income. Whiles their children sell the shea fruits and use the income to buy food.

The danger however, was that, the shea trees in the study setting were not been planted but however faced destruction for firewood by other people who engaged in the firewood and charcoal business. The decrease in the availability of shea nut caused by climate change was a reason for low quantity of nut and butter, which give the women in general low incomes to access food in the lean season. Also it is more obvious to say all the rural women in the kumbungu district were engaged in the picking and butter extraction function in the chain without directly involve in the trade or export of the butter which could fetch higher income for verity of food.

6.3 Recommendations:

Based on the findings of the study, the following recommendations were advanced;

- Opinion leaders in the study area with support from the Ministry of Food and Agriculture should encourage farmers to plant shea trees in their farms to provide more shea nuts for women, especially in the season.
- Further research should be done by the Savannah research institute (SARI), the universities in the region and other relevant institution to explore more in the shea business.
- Multiple Ecological Farms (NGO) should design and implement an educational intervention for the informal group of women who are engaged in the shea butter extraction to give them skill training and link them to market and market information in the Shea butter business to expand their incomes.

- Micro finance company should provide financial and technical assistance which will facilitate and boost rural women engage in the shea butter extraction business to increase their income status.
- The SNV rural women capacities building programme should extend to cover the individual butter extractors to enhance their knowledge on other ways they could make money from engaging in the shea butter business.
- The Ghana government should implement policy to protect the shea tree to stop the cutting down for the tree for the benefit of the rural women.
- Ghana government one district, one factory policy should put factory in the study area to produce shea fruit juice and jam for local use and export to create a new way of generating income from the shea processing business to increase women incomes for food access in the lean season.

CHAPTER SEVEN

6.1 Reflection on the research:

This study was about shea butter income and its contribution to women and their household food access. The main aim was to satisfy my curiosity by examining the reasons that restricted women who are engaged in shea butter extraction to have adequate income for food access during the lean season and to fill a knowledge gap and recommend intervention for my organization (Multiple Ecological Farms) and other relevant stakeholders to tackle the problem in the study area. I was more confident with the new practical knowledge I obtain from Van Hall Larinstien University of Applied Science in the Netherlands to enable me for the collecting and analyzing this qualitative data I was going gather in the field. Though my study was on qualitative data but I was compelled to considered little quantitative data analysis to make my finding analysis more clear since my research was more focus on shea butter income which has to do with numbers and quantities. To add innovation to my study I decided to do shea butter extraction process documentary on the grounds that the women involve agreed to be video. This was a hard decision because it require money and also addition time to shoot the video and edit as well, but because of my high interest to do a good research that can open eyes of my organization and other researchers in to the knowledge of shea butter business, I did not considered the consequence that I might face. Before left for the research in Ghana I first met my supervisor and we agreed on how we will be communicating and how she would be critical on supervising my work to enable me do a good work. However I planed how I wanted to use the time scheduled for the whole research but when I got to Ghana, I adjusted the time little and went earlier to the research area for the data collection. The first day I got there I realize means of transportation was a big challenge since I had to walk 5 miles to see the assemble member who was going to help me to do community entry and the fact that I need to move from community to community for the data collection. The next morning I went back to Tamale and rented a motor bike for one month at 100 Euro equivalent and fuel it at additional cost 5Euro equivalent every two days.

Though I bought the camera I used at a cost of 200 Euro in the Netherlands before I got to the research area, I needed someone to follow me every day for the video coverage which I paid 30 Euro equivalent for un-professional photographer. All this straggles got me thinking re-writing my methodology to remove certain things, but I later encouraged myself that I can do it, no matter what. It was also fascinating to interpret and got information from the videos and later asked for confirmation during the interviews. It was also very worrying in my data collection to find out that most female children at school going age were involve in the harvest and selling of fruits at the expense of their school, especially, seeing the dangers in climbing the shea tree and picking it in the bush. It interesting to see large numbers of shea trees growing in the wild as my desk study revealed earlier on, which a great potential for poverty alleviation in the area. It was a good practical experience to organized diverse community members from different households and groups for the focus group discussion which later come out that they have common experiences in the butter business. Although it was not easy for me to organize the women, but with the support of the assembly member it was positive. My position as the field worker in my organization who worked in different rural areas has helped me in the formation of the research problem, objectives and the research questions. Some of the respondents in a way try to influence me to have close friendship with them but I stayed focus and neutral with the research ethics. Also, I understood and spoke the same language with the respondents but continue neutral since I was not familiar with the communities' members and their values. Because I was not also familiar to them, there were no influence in their decisions to give neutral responds.

It was very difficult to get respondents because, most of the respondents were women who wake up early either go for picking or in farms to assist the men since it the beginning of the planting season but with the help of the motor bike I rented I could move from farm to farm to get them. Other people were not willing to participate because they have the notion i was given a huge amount of money by the government and wanted to used them for my own benefits through the research, consequently I had to offer them two pieces berthing soap before interviewing them. The most difficult respondents to give information was the shea trader/exporters, they were not willing share information to me but I presented to them the introductory letter from Van Hall Larenstein University of Applied Science which convinced them to share some information but not all the information was gotten from them, for example the price they sell a bag of nut and butter to international buyers. Also information on who control the income from the shea butter in the household was not sufficient to make a precise conclusion from that.

Aside the numerous challenges mention, it was very interesting to find out that women were spending much time and labour to extract shea butter but do not get the requisite incomes returns from their hard work. The research was much challenging but I was able to interview 50 respondents and also collected the data on the video. I spend days (four weeks) in collecting the data, and the other weeks for organizing and analyzing the data. Though I intended to spend one week with my family but I end up spending 3days with them before I return to the Netherlands. The video coverage help me to get more information when I had play back the scenes to edit the documentary. Allthis methods together gave me great experience and made me to collect the right information without influencing the respondent's to give the information.

During the field work, I was shocked to hear that women in the communities do not have the right to own land for farming by which the shea trees are found on. Also it was surprising to find out that women do not inherit properties like land of which they need to pick shea nut from, it was rather the men who own land and allowed their wives to access shea nut from it, as a result I tried to question how women without husbands get access to nut picking? The answer was that they pick from the far distance bushes of which the land belong to the chief of their communities. This makes more it difficult for those women to carry large quantity of the nut back home resulting in to low yield and low income for food access in the lean season. I observed that all the respondents' houses members who are women picked shea nut and half of them were engaged in the butter extraction which agreed with my literature review that stated that rural women in northern Ghana depended on shea income for their daily sustenance. I observed that the communities honors and respect their chiefs and whatever the chiefs says they obey but there is no any rule passed by the chiefs to protect the cutting down of the shea tree for fire wood and charcoal. I strongly believe that this study will help my organisation to fill the knowledge gap which currently exist on low incomes of women in shea butter extraction in Kumbungu and their household food access to enable my organization to formulate and implement projects that will lead to increase of women income in shea butter extraction in Kumbungu district to help them access food during the lean season.

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APPENDICES

Appendix 1

QUESTIONNAIRE

GENERAL HOUSEHOLD INFORMATION

Date of Interview: _____

- 1) Name of community: _____
- 2) Gender A. Male [] B. Female []
- 3) Age of respondent A. 15-34yrs [] B. 35-54yrs [] C. 55+yrs []
- 4) Educational level
 A. No formal education [] B. Primary [] C. JHS/JSS []
 D. SHS/SSS [] E. Tertiary [] F. OTHERS []
- 5) Marital status A. Single [] B. Married [] C. widow []
- 6) Household size A. Males _____ B. Females []
- 7) How many household members attain the following level of education?

A. No formal education.....

B. Primary.....

D. JHS.....

E. SHS.....

F. Tertiary

- 8) How many of your children are working and supporting the household?

HOUSEHOLD WEALTH

- 9) Does your household have?

Asset	Yes or No	Asset	Yes or No
a) Electricity		b) Lorry or tractor	
c) Radio		d) Mobile phone	
e) Farm Land		f) motorcycle	
g) Bicycle		h) Sheep or goats	
i) Motor king		j) Cow or donkey	
k) Savings in the bank.		l) poultry	
m) others			

OCCUPATION:

- 10) Which part of the Shea business do you operate?

Category of Function	
Pickers	
Butter Extractors	
Traders	

PICKERS

- 10) How long have you been in this business
- A. 1-5yrs
 - B. 6-10yrs
 - C. 11-20yrs
 - D. 20+yrs
- 11) Where do you get the shea nut to pick?
- 12) How many bags (kg) of shea nut did you collected in the following years?
- 2018 _____
- 2017 _____
- 2016 _____
- 2015 _____

AVAILABILITY AND ACCESSIBILITY OF SHEA NUT

- 13) Would you say whether there is an increase in shea nut yield over the past seasons?
- A. Yes [] B. No []
- If Yes**
- 14) Explain how it has increase?
- If No**
- 15) Explain?
- 16) What would you say is the cause of the increase or decrease in shea nut yield?

- 17) Which season is there shea nut available?
- A. Early raining season [] (April to June)
 - B. Raining season [] (July to September)
 - C. Late raining season [] (October to November)
 - D. Early dried season [] (December)
 - E. Dried season [] (January to February)
 - F. Late dried season [] (March)

DEMAND FOR SHEA NUT

- 18) How would you rate the Shea nut business over the past years?

- 19) Would you say the demand for shea nut has increased over the past years?
- A. Yes [] B. No []

If Yes

- 20) Explain how it has increase?

If No

- 21) Explain how?

- 22) Would you say the changes in demand have affected your business?

If Yes

- 23) Explain how it has affected your business?

- 24) Who are the customers of Shea nut?

- 25) Where do you sell the nuts?

PRICES OF SHEA NUT

26) Has there been an increase in the price of shea nut over the past years?

A. Yes [] B. No []

If Yes

27) How has it increased?

If No

28) Explain what happen to the price?

29) What is the price of a bowl (kg) of shea nut in the following years?

2018 _____

2017 _____

2016 _____

2015 _____

30) What determines the quality of the Shea nut?

31) How does the quality determine the price?

PROFITABILITY OF SHEA NUT

32) Would you say the shea nut business in profitable A. Yes [] B. No []

33) How much profit do you make on a bag of shea nut?

34) How much do you incurred in producing a bag of shea nut?

35) What are your input cost for collecting the shea nuts?

HOUSEHOLD FOOD ACCESSIBILITY

36) Is the profit from your shea nut business contribute to put food on the table for your family?

A. Yes [] B. No []

If Yes

37) How many square meal do you have a day?

38) Is there any time there is food shortage in your household? A. Yes [] B. No []

If Yes

39) Which season or time of the year is food not available?

40) What do you do when you round out of food at that time?

41) What other business do you have aside shea business?

42) Do you earn any additional income from the shea nut picking part from the shea nut sells?

A.Yes [] B. No []

If Yes

43) Explain what income you get

44) Tell me some of the shea product you consume?

45) Do you belong to any Shea picker's cooperative in the community? A. Yes [] B. No []

If Yes

46) What support do you get from the cooperative?

47) Do you get support from any organization? A. Yes [] B. No []

If Yes

48) What kind of support do you get?

BUTTER EXTRACTORS

49) How long have you been in this business?

50) Where are your sources of raw materials (shea nut) for the butter extraction?

51) Is the shea nut available all year round? A. Yes [] B. No []

If Yes

52) At what season of the year is the shea nut readily available?

If No

53) At what season of the year do you experience shortage of shea nut for your butter?

A. Would you say over the years there have been increased in the availability of the shea nut?

A. Yes [] B. No []

If Yes

54) What do you think cause the increased

If No

55) What do you think cause the decrease?

56) How many bags of shea nut did you processed into butter in this following years?

2018 _____

2017 _____

2016 _____

2015 _____

57) How would you rate the Shea butter business over the past years?

A. Very poor [] B. Poor [] C. Good [] D. Very good []

58) Would you say the demand for shea butter has increased over the past years?

A. Yes [] B. No []

If Yes

59) Why do you say the demand has increased?

60) What do you think caused the increase in demand for shea butter

If No

61) Has demand decreased by A. a little [] B. a lot []

B. What do you think caused the decrease in demand for shea butter?

62) How does the changes in demand for the butter affected your business?

63) Who are the customers for your Shea butter?

64) Which place do you sell your butter?

PRICES OF SHEA butter

65) Has there been an increase in the price of shea butter over the past years?

A. Yes [] B. No []

If Yes

66) Has price increased by A. a little [] B. a lot []

If No

67) What happened to the prices of shea butter?

68) What is the price of 1 (kg) of shea butter in the following years?

2018 _____

2017 _____

2016 _____

2015 _____

69) What determines the quality of the Shea butter?

70) How does the quality determine the price?

PROFITABILITY OF SHEA BUTTER

71) Would you say the shea butter business in profitable A. Yes [] B. No []

If Yes

72) How much profit do you make on a bag of shea nut processed into butter?

73) How much cost (inputs) do you incurred in processing a bag of shea nut into butter?

74) How much kilogram (kg) of butter do you extract from a bag of shea nut

HOUSEHOLD FOOD ACCESSIBILITY

75) Is the profit from your business able to contribute and put food on the table for your family
A. Yes [] B. No []

If Yes

76) How many square meal do your family have in a day?

A. 1 [] B. 2 [] C. 3 []

77) Is there any time there is food shortage in your household? A. Yes [] B. No []

If Yes

78) Which season is food not available in the household?

79) What do you do when you run out of food in the shortage period?

80) Do you get any other income from the extraction process, apart from the butter sells? A. Yes [] B. No []

If Yes

81) Explain how you get other income from it?

82) How much do you earn from that annually? _____

83) Does your household consume any product of Shea? A. Yes [] B. No []

If Yes

84) Which of the Shea product do you consume?

85) Do you know any Shea butter cooperative in the community? A. Yes [] B. No []

If Yes

86) Are you a member of the cooperative? A. Yes [] B. No []

87) What support do you get from the cooperative?

88) Do you get support from any organization? A. Yes [] B. No []

If Yes

89) What kind of support do you get?

SHEA TRADERS/EPORTERS

90) How long have you been in this business

91) Where do you buy your nuts/butter?

92) Who do you sell your nut/butter to?

93) What determines the quality of the Shea nut/butter?

94) How does the quality determine the price?

95) Do you trade the shea nut/butter all year round A. Yes [] B. No []

If Yes

A. Is it always in large quantity?

If No

96) At what season of the year do you experience shortage of shea nut/butter?

97) Would you say over the years there have been an increased in the availability of the shea nut/butter

A. Yes [] B. No []

If Yes

98) What are some of the reasons in the increased?

If No

99) What do you think cause the shortage?

100) How many bags of shea nut or kilos of butter did you trade in this years?

2018

2017

2016

2015

101) How would you rate the Shea nut and butter trade (business) over the past years?

102) Would you say the demand for shea butter has increased over the past years?

A. Yes [] B. No []

If Yes

103) Explain how the demand increased?

104) What do you think caused the increase in demand for shea butter?

If No

105) Explain what happen to the demand?

106) How does the changes in demand affected your business?

107) Who are your customers of Shea nut/butter?

108) Has there been an increase in the price of shea nut/butter over the past years?

A. Yes [] B. No []

If Yes

109) Has price increased by A. a little [] B. a lot []

If No

110) Has prices of shea nut/butter decreased?

111) What is the price per l (kg) of shea butter in the following years?

2018 _____
2017 _____
2016 _____
2015 _____

112) What determines the quality of the Shea butter?

113) How does the quality determine the butter price?

114) Is the profit from your business able to put food on the table for your family

A. Yes [] B. No []

If Yes

115) How many square meals a day?

116) Is there any time there is food shortage in your household? A. Yes [] B. No []

If Yes

117) Which season is food not available?

118) What do you do when you run out of food in that period?

119) Do you get any other income from the business aside shea nut and butter trade? A. Yes [] B. No []

If Yes

120) What is other income is it? _____

121) How much do you earn from that annually _____

122) Do you know any Shea traders cooperative in the community? A. Yes [] B. No []

If Yes

123) Are you a member of the cooperative? A. Yes [] B. No []

124) What support do you get from the cooperative?

125) Do you get support from any other organization? A. Yes [] B. No []

If Yes

126) What kind of support do you get?
