UNIVERSITY OF CAPE COAST

NON-GOVERNMENTAL ORGANIZATIONS' CAPABILITY AND SMALL SCALE SHEA BUTTER PROCESSORS' TECHNICAL EFFICIENCY AND POVERTY OUTCOMES IN THE NORTHERN REGION OF GHANA

FATAI AKOSILE

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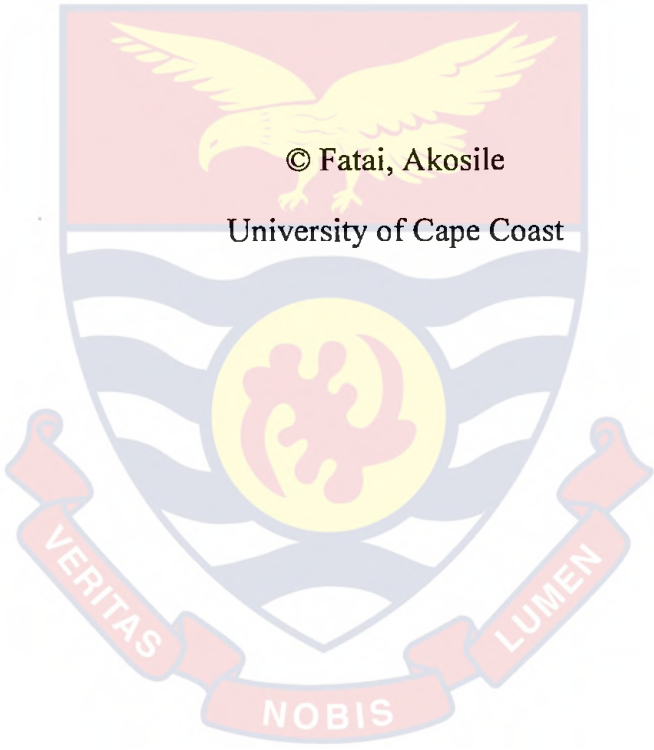

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NON-GOVERNMENTAL ORGANIZATIONS' CAPABILITY AND SMALL SCALE SHEA BUTTER PROCESSORS' TECHNICAL EFFICIENCY AND POVERTY OUTCOMES IN THE NORTHERN REGION OF GHANA

BY

FATAI AKOSILE

Thesis submitted to the Department of Agricultural Economics and Extension of the School of Agriculture of the College of Agriculture and Natural Sciences, University of Cape Coast, in partial fulfillment of the requirements for the award of Doctor of Philosophy degree in Non-Governmental Organizations Studies and Community Development

JULY 2017

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature:..... Date: 11/09/2018

Name: FAITH AKOSILE

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature:..... Date: 11/09/2018

Name: Prof. Henry De-Graft Acquah

Co-Supervisor's Signature:..... Date: 11/09/18

Name: Dr. William Charter

ABSTRACT

This study assessed the empirical linkages between Non-Governmental Organizations' capability and small scale Shea butter processors' technical efficiency and poverty outcomes in the Northern Region of Ghana. Using a cross-section survey design, the study adopted a quantitative approach to construct a capability index for the NGOs in the Shea industry. The study also estimated technical efficiency of the women small scale Shea butter processors using stochastic frontier production function. It also assessed poverty outcomes of the small scale Shea butter processors in the Northern Region and ascertains its determinants including empirical linkages with capability index of NGOs and technical efficiency of the women. The study found among other things that the NGOs in the Shea industry had slightly above average capability based on the computed capability index. They however lagged behind in terms of financial transparency and accountability and compliance with relevant legal and regulatory requirements. The women small scale Shea butter processors were also found to have varying levels of technical efficiency across the districts. The study found high level of consumption expenditure poverty among the women but less poverty using other indicators. The study recommends inter alia financial transparency and accountability of the NGOs, continuous training of the women small scale Shea butter processors and for government to subsidize the main inputs in Shea butter processing.

KEY WORDS

Capability

Non-Governmental Organizations

Poverty

Shea Industry

Small scale

Technical Efficiency

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DEDICATION

To my family

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LIST OF ABBREVIATIONS

ADRA	Adventist Development and Relief Agency
CBEs	Cocoa Butter Equivalents
CBIs	Cocoa Butter Improvers
CBOs	Community Based Organizations
CEOs	Chief Executive Officers
CFD	Common Fund for Development
COCOBOD	Cocoa Board
CRIG	Cocoa Research Institute of Ghana
CWIQ	Core Welfare Indexes Questionnaires
DEA	Data Envelopment Analysis
DFID	Department for International Development
EDAIF	Export Development and Agricultural Investment Funds
GAR	Gross Attendance Rate
GCMB	Ghana Cocoa Marketing Board
GDOs	Grass Development Organizations
GDP	Gross Domestic Product
GLSSs	Ghana Living Standard Surveys
GNI	Gross National Income
GROs	Grass Roots Organizations
GSGDA	Ghana Shared Growth and Development Agenda
GSP	Gross State Product
GSS	Ghana Statistical Service

HR	Human Resources
ILO	International Labour Organization
ISODEC	Integrated Social Development Centre
ISSER	Institute of Statistical, Social and Economic Research
JHS	Junior High School
JICA	Japan International Cooperation Agency
LFF	Labour Force Framework
LPG	Liquefied Petroleum Gas
MDGs	Millennium Development Goals
MLE	Maximum Likelihood Estimation
MMDAs	Metropolitan Municipal & District Assemblies
NAR	Net Attendance Rate
NGOs	Non-Governmental Organizations
NHIS	National Health Insurance Scheme
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Square
PSOs	Private Service Organisations
PVOs	Private Voluntary Organizations
RBV	Resource Based View
REGSEC	Regional Security Council
RSS	Regression Sum of Squares
SAG	Savannah Alliance Ghana
SDGs	Sustainable Development Goals

SHS	Senior High School
SMEs	Small and Medium Enterprises
SNG	Shea Network Ghana
SNV	Stichting Nederlandse Vriwilligers
SPSS	Statistical Package for Social Sciences
SSSCE	Senior Secondary School Certificate Examination
TFP	Total Factor Productivity
TPG	Total Poverty Gap
TSS	Total Sum of Squares
US	United States
USA	United States of America
USAID	United States Agency for International Development
VSLA	Village Savings and Loans Association

CHAPTER ONE

INTRODUCTION

Background to the Study

A fundamental goal of every society is the development of its people. Development can be described as the state or process by which a people or state grows and become more advanced with an improvement in their social, economic and cultural lives. Traditionally, development is viewed as the capacity of a national economy to generate and sustain annual increases in its real gross national income (GNI) per capita (Todaro and Smith, 2006). It was therefore believed that if the rate of growth of an economy is faster than both the inflation rate in the economy and the rate of growth of the population, then there is development in such an economy.

Economic development was also typically seen in terms of the planned alteration in the structure of the economy with declining share of agricultural production and employment and corresponding increases in the shares of the manufacturing and the services sectors. It was postulated that the growing manufacturing sector especially would absorb surplus labour from the agricultural sector where there is declining marginal productivity of labour (Todaro and Smith, 2006). It was thus assumed that growth in real GNI per capita spurred by the manufacturing sector will automatically have a trickle-down effect on the population in terms of employment creation, reduced poverty and less inequality. However, it was realized that this may not necessarily be the case as evidenced by the occurrence of high incidence and level of poverty, unemployment and

inequality despite significant increases in real GNI per capita in some economies of the developing countries in the 1950s and 1960s (Todaro and Smith, 2006).

The reality therefore, calls for a new understanding of the concept of development as a multi-dimensional process of not only economic growth of real GNI per capita but also major changes in social structures, popular attitudes and national institutions leading to significant reduction in poverty, inequality and unemployment. It also requires that larger proportion of the population participates in generating the growth and also in sharing the fruits of economic growth.

With a more comprehensive view of what constitutes development, the Millennium Development Goals (MDGs) were adopted in September 2000, by the governments of developing and developed countries as a strong commitment of the international community towards eradicating poverty and achieving other development goals by the year 2015. The MDGs have since 25th September, 2015 been replaced by 17 Sustainable Development Goals (SDGs) with similar and more ambitious plans of action to end poverty and all forms of human misery by the target year of 2030. As expected, the first MDG and also SDGs address the problem of extreme poverty and hunger with the targets to reduce by half the proportion of people living on less than $1.25 a day and to reduce by half the proportion of people who suffer from hunger. The first of the SDGs which seeks to reduce extreme poverty and hunger is therefore fundamental to the achievement of the remaining SDGs as well as dependent on them.

Ghana was lauded as the first Sub-Saharan African country to achieve the first objective of the Millennium Development Goals (MDG1) by halving the country's 1990 poverty rate before the 2015 target year (Quinones and Diao, 2011). The share of the population living in poverty declined from 51.7 percent in 1991/1992 to 39.5 percent in 1998/1999 and further to 28.5 percent in 2005/2006 according to the Ghana Living Standard Surveys (GLSS 5) report. Reports from Core Welfare Indices Questionnaires (CWIQ) surveys between 1997 and 2003 using asset-based measures of well-being gave similar indications.

However, incidence and depth of poverty are still very high. Data from various Ghana Living Standard Surveys (GLSSs), Demographic and Health Surveys, Core Welfare Indices Questionnaires (CWIQ) and other limited quantitative and qualitative surveys confirm the pervasiveness of poverty in Ghana. According to ISSER (2013), about 25 percent of Ghanaians are estimated to be living in poverty while GSS (2014) also estimated about 24.2 percent of the population to be in poverty. Poverty is also characterized by low level of income as well as under nutrition, poor health, illiteracy, poor shelter; lack of political voice and social exclusion. Also, there is high level of youth and graduate unemployment and inequalities in income distribution.

There is also a major concern about spatial dimension of poverty and inequality with the three Northern regions of Ghana clearly lagging behind the rest of the country in terms of major indicators of poverty and well-being. For instance, Coulombe and Wodon (2007) reported that the northern savannah area, which is by far the poorest of the ecological zones, has been left behind in the

national reduction in poverty, even though poverty was smaller in the region in 2005/2006 than it was in 1991/1992. This has resulted in an increase in the share of the poor living in the rural savannah areas (Coulombe and Wodon, 2007). Hence, while the rural savannah areas in 2005/2006 accounted for only a quarter of the population, they accounted for half of the poor.

It is even more disturbing to know that periods of economic growth are characterized by divergence between the northern and southern part of Ghana and periods of economic decline tend to lead to convergence between the two sectors. While this is consistent with Kuznets's inverted-U hypothesis of income distribution for a developing economy like Ghana, it is also an indication that planned interventions will be required to bridge the gap (Osei and Remi, 2013).

Meanwhile, outcomes of numerous interventions in the areas by the government and other development partners raise questions about the relevance, effectiveness, efficiency, impact and sustainability of poverty reduction intervention policies and programmes by the government and other development partners. It also indicates that policies and programmes intended to help the poor cannot succeed unless the government and other stakeholders know who the poor are, where they live and how they are likely to respond to different growth strategies; thus facilitating well targeting of interventions that address the specific needs of the beneficiaries rather than broad based interventions with poor targeting (Osei and Remi, 2013).

Every society has its own views on what constitute a minimum standard of living. Such normative thresholds are commonly expressed by means of a poverty

line, which specifies the minimum standards to which everybody in a society should be entitled (Todaro and Smith, 2006). A person is deemed poor if his or her income or consumption falls below that threshold. This means that poverty lines are country-specific, in so far as views about what individuals should be entitled to will differ from one society to another.

The shares of agriculture in Ghana's GDP and employment have been declining from 39.4% and 53.1% respectively in 2000 to 22.0% and 44.7% respectively in 2013 (Aryeetey and Baah-Boateng, 2016). However, in order to address the problem of poverty and promote economic development, agriculture must necessarily play a pivotal role as development in the sector will have impact on a greater proportion of the population. Hoekman, Michalopoulos, Schif and Tar (2001) contend that for growth to have significant impact on reducing poverty, the growth should occur in the sector of the economy which employs the majority of the poor segment of the population.

The cocoa sub-sector for example, has contributed significantly to reducing poverty in cocoa growing areas and has been a major source of foreign exchange earnings for the country (ISSER, 2013). Meanwhile, there are other non-traditional crops which when properly harnessed can complement cocoa not only as poverty reduction tool but a major source of foreign exchange earnings and raw materials for local industries. One such crop is Shea which constitutes a key source of income for a significant number of women particularly in the Northern regions of Ghana. It has been estimated that the Shea industry supports the livelihood of approximately 900,000 rural women involved in the sector in

Northern Ghana (SNV, 2011). As a result, interventions in the Shea industry have been numerous in recent times but most visible are the activities of Non-Governmental Organizations (NGOs) which seek to increase women's involvement in Shea butter making by encouraging group formation, providing training and equipment and facilitating links with international buyers.

It is however important that the NGOs have certain capability to be able to effect the positive changes in their beneficiary women small scale Shea butter processors by improving their efficiency through training, inputs supply and market facilitation. The issue of technical efficiency has become very important for the Shea butter processors because of the low quality of Shea butter that is exported from Ghana and other West Africa countries with about 80 percent of the Shea butter being grade D (ASBI, 2013). Meanwhile, there is high demand for grade A Shea butter in Europe and USA and this can be achieved when the Shea butter processors have requisite training to improve their efficiency to produce better quantities and quality Shea butter thereby helping to reduce poverty among the women.

Statement of the Problem

Inefficiency and underemployment have been identified as the main causes of working poverty among informal sector workers in Africa such as the women Shea butter processors in the Northern Region of Ghana (Domfe, 2013). However, this present study focuses on how Non-Governmental Organizations (NGOs) in the Shea industry are helping to improve technical efficiency of the women and reduce poverty among the women.

Non-Governmental Organizations (NGOs) are indispensable partners to governments in terms of their contributions to poverty reduction and economic development in Ghana. By their operations, they appear to have capacity to reach people at the grass roots than even government machineries at local levels. They are also involved in a wide range of pro poor programmes and projects in the area of agricultural production, land rehabilitation, provision of agricultural inputs and marketing of farm produce among others. There is proliferation of NGOs especially in the Northern Region of Ghana with Tamale now regarded as the NGO capital of Ghana.

However, anecdotal evidence seems to suggest that the NGOs operating in the Northern Region lack the capability to cause the positive change in their beneficiaries especially the small scale Shea butter processors by helping them to improve their efficiency and reduce poverty. It is common to hear that many of the NGOs do not even have office space and physical addresses where they could be located but operate from their owners' car boots and garages. No study to the best of my knowledge has however been conducted to assess the capability of NGOs in general and those operating in the Shea industry in the Northern Region in particular to ascertain the veracity of such claims and this study seeks to fill that knowledge gap.

Also, available literature on NGO management has tended to be more descriptive rather than analytical with no clear focus on organizational and management issues and lack of clear link with wider external relationships and partnerships context within which the NGOs operate (Lewis, 2001). Again, the

linkages between the NGOs' capability and small scale Shea butter processors' technical efficiency have not been empirically analyzed. This study therefore sought to construct a capability index for the NGOs in the Shea industry as a reference point in assessing NGOs in the Shea industry in particular and NGOs in other sectors. This will help the NGOs to improve all aspects of their organizational lives. It will also be useful to government regulatory bodies, donor communities, financial institutions and other stakeholders in the Shea industry development to assess and profile the NGOs in the industry.

Some studies have been conducted on the economics of Shea butter production in Ghana including Pascal (1978), Asare (1997), Darkwa (2000), Esinam (2006) and more recently, Issahaku et al (2011). Pascal (1978) for instance conducted cost-benefit analysis to establish the profitability of traditional Shea butter production. Asare (1997) also examined the export behaviour of Shea nut in Ghana in response to exchange rate policy. Darkwa (2000) also modeled the export demand and supply of Shea nuts in Ghana from 1970 to 1998. More recently, Issahaku et al (2011) did an analysis of allocative efficiency of Shea butter processing methods in the Northern Region of Ghana.

None of these studies however considered the roles of NGOs in the Shea industry to help improve efficiency in the sector by providing training, inputs, and market facilitations. This present study focused on how the NGOs with their varying capability are helping to improve the technical efficiency of the women small scale Shea butter processors and reduce poverty among the women. This is because efficiency has become an important issue to the Shea butter processors

given that over 80% of Shea butter from West Africa is classified as grade D with low market demand and prices.

Also, there is a growing concern about incidence of working poverty among informal sector workers such as the small scale Shea butter processors in the Northern Region. Despite the modest gains Ghana has recorded in reducing poverty from the levels experienced in the 1990s, much effort is still required to arrest the situation in which a significant proportion of the population still live in poverty. Poverty situation also differ among different segments of our society and in different parts of the country with the three Northern regions generally recognized to be lagging behind the rest of the country in terms of outcomes of poverty reduction strategies and interventions (Osei and Remi, 2013). This calls for a concerted effort on the part of all stakeholders in order to achieve the national objective of poverty reduction and economic growth in all parts of Ghana.

However, most of the efforts to reduce poverty have been targeted at economically inactive persons such as the elderly, the sick and the physically challenged (Domfe, 2013). Available literature however suggests that there is a growing concern for high incidence and level of poverty even among the economically active segment of the society (Osmani, 2003; Osinubi, 2003). Meanwhile, the issue of poverty among economically active population has not received much attention in Africa. Policies on poverty reduction have tended to be focused on empowerment of the unemployed people to get employment with the

belief that people who work should earn enough to escape poverty. Yet, being employed in just any economic activity is not a guarantee for escaping poverty.

The Shea industry employs a large number of women, about 900,000 according to SNG (2009), especially the small scale operators engaged in the collection, processing and sales of Shea products. Many of the women small scale Shea butter processors belong to cooperatives that are supported by NGOs which seek to help them improve their technical efficiency by providing trainings, inputs supply and market facilitation. There has not been a comprehensive empirical study with focus on examining poverty among the small scale Shea butter processors and factors affecting their poverty levels especially how the NGOs in the industry are helping to improve their technical efficiency based on the NGOs' capability.

This study therefore assessed the capability of NGOs operating in the Shea industry in the Northern Region of Ghana with respect to their internal management structures, their development activities, and their relationships and partnerships with other stakeholders in development. The study also estimated technical efficiency of the women small scale Shea butter processors and its determinants including capability of the NGOs and assessed the empirical linkages between the NGOs' capability, technical efficiency of the women small scale Shea butter processors and poverty outcomes of the women.

Objectives of the Study

The main objective of this study is to assess the empirical linkages between the NGOs' capability and women small scale Shea butter processors'

technical efficiency and poverty outcomes in the Northern Region of Ghana. The specific objectives of the study are:

1. to construct a capability index for NGOs in the Shea industry in the Northern Region
2. to estimate the technical efficiency of the women small scale Shea butter processors in the Northern Region
3. to analyze empirical linkages between poverty outcomes of the small scale Shea butter processors in the Northern Region and their technical efficiency and capability index of NGOs in the Shea industry

Research Questions

Based on the foregoing, the study raised and answered the following research questions:

1. What are the capabilities of the Non-Governmental Organizations in the Shea industry in the Northern Region?
2. How technically efficient are the women Small Scale Shea processors in the Northern Region?
3. What are the poverty outcomes of the small scale Shea butter processors in the Northern Region and linkages with their technical efficiency and capability index of NGOs in the Shea industry?

Significance of the Study

The findings of this study will be useful to the small scale Shea butter processors and the NGOs providing services to the small scale Shea butter processors in the Northern Region. It will also be useful to the government and

policy makers as well as input suppliers and buyers of Shea products among others. For the small scale Shea butter processors, the study will be relevant by identifying the important variables to improve their technical efficiency, reduce poverty and improve their overall welfare. It will also be useful to the NGOs that are providing diverse interventions to the Shea industry players to enable them focus on the most pertinent issues of concerns to the small scale Shea butter processors. The NGOs themselves will find the study relevant to assess their own capabilities in terms of internal management structure, development activities as well as relationships and partnerships with other relevant stakeholders in development and how they impact on technical efficiency and poverty reduction of their beneficiaries. Again, the government and policy makers will also find the outcomes of the study useful for designing relevant policies that will inure to the benefit of the industry players especially the small scale Shea butter processors.

Delimitations of the Study

This study focused on the small scale Shea butter processors as major stakeholders in the Shea industry. The small scale Shea butter processors and Shea nut pickers are the two most vulnerable groups because they are at the lowest end of the Shea value chain and despite their indispensable roles, are the least able to demand their fair shares of the industry's cake. Any study with poverty as its focus will therefore necessarily focus on them and the present study is no exception. However, the present study excluded the Shea nuts pickers because their job is seasonal, not full time and not year round making them unsuitable for the study. Two of the factors mostly attributed to working poverty

in Africa are technical inefficiency and under employment (Osmani, 2003). This study therefore seeks to assess enterprises that are full time to see the linkages between the technical efficiency and poverty outcomes of the women.

Even though the Shea industry covers the Savannah area comprising the three Northern regions and parts of Volta and Brong Ahafo regions, the present study focuses on the Northern Region as the conditions in the Northern Region reflects conditions in the other areas and findings in the study areas can be extended to the other savannah areas. The researcher also had limited time and financial resources to cover the entire savannah areas.

The sampling frame for the study was obtained from SNG and only Shea butter processors with the NGOs registered with SNG is covered by the frame. Meanwhile, there are other Shea butter processors that are not registered with any SNG affiliate NGOs and they are excluded from the study.

Limitations of the Study

The study sought to adopt the methods used by the Ghana Statistical Service to compute the Ghana Living Standards Surveys (GLSSs). Some respondents to the household questionnaires however could not comprehensively answer questions on some items of the household consumption expenditure such as rent on house, electricity bills and in some cases hospital fees. This imposed some limitations on the study's ability to compute household consumption expenditure and compare the findings with those of the GLSSs. The study therefore relied also on analysis of other welfare indicators such as household

assets, access to services, and human development variables and compared the outcomes with the GLSSs and other studies.

Organization of the Study

This study is organized into eight chapters. Chapter one is the introduction which gives the background to the study, statement of the problem, the main and specific objectives of the study, research questions and significance of the study. It also discusses the limitations and delimitations of the study. Chapter two gives an overview of the Shea industry in Ghana and covers areas such as a brief history of Shea industry development in Ghana, importance of Shea for poverty reduction and economic development, the Shea value chain and the main stakeholders in the industry and constraints and prospects of the industry. Chapter three reviewed literature relevant to the theme of the study and covers areas such as the roles of NGOs as development partners, factors to be considered in starting and operating an NGO in Ghana, structure and management of NGOS, theoretical and empirical literature on productive efficiency and poverty; and theoretical and conceptual frameworks of the study.

Chapter four focuses on the research methods adopted to achieve the specific objectives of the study. It covers the philosophical and sociological underpinnings of the study, design of the study, study area description, research population, data sources and types, sampling methods and sample size. It also covers the analytical framework of the study, description of variables, empirical model and validation, and methods of data analysis. Chapter five presents the results and discussion of the capability index of NGOs. Chapter six presents the

results and discussion of the technical efficiency of the small scale Shea butter processors while chapter seven presents the results and analyzed the empirical linkages among poverty outcomes of the women and their technical efficiency and capability index of the NGOs. Finally, chapter eight gives a summary, conclusions and recommendations based on the findings of the study.

CHAPTER TWO

THE SHEA INDUSTRY IN GHANA

Introduction

This chapter presents an overview of the Shea industry in Ghana. It looks at a brief history of Shea industry development, economic importance of the Shea industry, Shea as woman-crop, the Shea value chain and stakeholders and; challenges and prospects of the Shea industry.

A Brief History of Shea Industry Development in Ghana

The Shea tree which has been in Ghana for ages is a wild indigenous tree exclusive to Africa and thrives in the savanna's ever-receding forests and on farms, where the trees are left to grow whenever land is cleared or returned to fallow. It is also increasingly being managed in controlled parklands. Shea trees reach maturity in about 15-20 years at which point it begins to produce quality nuts and can live from 200-300 years (SAG, 2014). The long gestation period has been attributed to erratic weather conditions (especially drought), genetic factors and the ravaging effects of annual bush fires, a common feature in the savannah zone. Increasing loss of Shea tree populations due to charcoal making, land clearing for development of other plantation crops (e.g. mango), aging and unproductive existing Shea tree populations all pose challenges to the development of the sector (COCOBOD, 2012).

However, in managed parklands and areas where bush burning is less rampant the Shea trees mature within 6 to 12 years (SAG, 2014). In Ghana, the Shea tree occurs over almost the entire area of Northern Ghana, over about 77,670

square kilometers and supports the livelihood of approximately 900,000 rural women involved in the sector in Northern Ghana (SNV, 2011). There is also sparse Shea tree cover found in Brong-Ahafo, Ashanti, the Eastern and Volta regions in the south of the country.

The decline in cocoa production in the early 1970s necessitated the search for substitute with the Ghana Cocoa Marketing Board (GCMB) in collaboration with the Cocoa Research Institute of Ghana (CRIG) therefore taking on the responsibility to conduct scientific research into the cultivation and processing of Shea nuts (COCOBOD, 2012). The result of this effort was the establishment of a branch of CRIG at Bole, Northern Ghana in 1976. The primary concern was to research into Shea production including improvement in tree yields, variety and conservation (SAG, 2014). Some modest achievements have been made in respect of methods of propagation, growth enhancement of Shea nut seedlings, management of existing Shea stands, and breeding and selection. Research has also been conducted into pests, diseases and parasitic plants as well as extraction, quality and use of Shea butter among others. However, poor research-extension linkage hamper the efficient adoption of improved technologies resulting in virtually no domestication and cultivation of Shea as a plantation crop by farmers (COCOBOD, 2012).

Before 1990, the Ghana Cocoa Board (COCOBOD) was the only mandated body responsible for buying and exporting Shea in Ghana. Shea marketing was however privatized in 1992/93 and from this period, the internal and external marketing of Shea are undertaken by licensed private buying

companies. COCOBOD however maintains a regulatory role by vetting and approving applications of private buyers seeking to purchase and or export Shea nut and Shea butter. The licensed private companies are also required by regulations and guidelines to submit periodic reports on their marketing operations to COCOBOD (COCOBOD, 2012).

Importance of Shea for Poverty Reduction and Economic Development

Shea is a key crop for Northern Ghana and its economy. It holds high potential for effective contribution towards rural poverty reduction, particularly in Northern Ghana. Almost all rural households in Northern Ghana depend heavily on Shea nut for their survival each year. The crop supplies over 60% of the annual income of most rural women (COCOBOD, 2012). The Shea tree is highly valued for its kernel contained in the fruit. The kernel is the source of Shea butter which is valued for its use as traditional cooking oil and also in the confectionery, pharmaceutical and cosmetic industries. The pulp of the fruit which contains proteins and carbohydrates is eaten during the period of food scarcity which occurs each year.

The Shea sector offers opportunities for economically viable inclusive business models that generate incomes and employment. The global demand for Shea butter is estimated to be 100,000mt/year with growing market demand in Europe and North America. However, global production thrives in the West African nations of Mali, Burkina Faso, Benin, Senegal, Cote D'Ivoire, Ghana and Nigeria (Addaquay, 2004). In Ghana, Shea butter production is about 30,000mt/year of which one-third is hand-crafted and the remaining industrially processed. The

sector involves an estimated number of 900,000 rural women who collect, process and trade nuts and butter (Lovett, 2004 & SNV, 2011).

The Shea subsector, most especially picking of the nuts and small scale processing of Shea nuts into butter for domestic consumption and sale is traditionally women dominated venture. Across Africa, it is women who traditionally harvest Shea fruit; an important nutritional resource in itself, as it ripens and falls from the tree during the lean season. During this period, food stocks are lowest and agricultural requirements are highest as farmers clear their land in readiness for planting crops with the coming of the rains. Revenues from the sale of this important crop therefore help rural households to feed themselves, to invest in livestock and other income-generating activities and to meet cash requirements including shelter, clothing, health care and school fees.

The Shea resource is the domain of women because within the household, they are traditionally responsible for gathering of non-agricultural products (e.g. wild fruits), and also because processing the Shea nuts into butter is considered women's work. Another significant consideration is that unlike most cash-crops, women control the revenues from the sale of Shea butter – which they use to care for the cash needs of their households and families. It is well documented that women impact more positively to their household welfare when in control of household resources especially in terms of nutritional and health outcomes (Doss and Morris, 2001).

Seidu (2013) conducted a baseline study to profile Shea butter processing enterprises in Shea producing areas of Ghana, specifically Northern Ghana; that is

Northern, Upper West and Upper East regions. Among other things, the study found that about 7,000 individuals are engaged in cooperative business in the Shea industry majority of who are women (97%). The study also found that groups are formed for the purposes of domestic consumption, profit making and to a less extent job creation through either local self-initiatives or as a result of external influence.

The Shea Value Chain and the main Stakeholders in the Industry

Value chain is a set of activities that a firm operating in a specific industry performs in order to deliver a valuable product or service for the market. Porter (1985) describes the value chain as the internal processes or activities a firm or company performs to design, produce; market, deliver and support its products and services. He further categorized the firm's business activities into primary and support activities. Primary activities are directly involved in transforming inputs into outputs and in delivery and after sales supports. The support services also include human resource management, technology development and firm infrastructure including planning, finance, accounting, legal, government affairs and quality management. Shank and Govindarajan (1992) also asserts that value chain for any firm is the value-creating activities all the way from basic raw material sources from component suppliers through to the ultimate end-use product delivery to the final consumers.

The Shea industry like any others involves the engagement of different players along the value chain. Kletter (2002) described four major categories of actors along the Shea value chain. These actors are the Shea nut pickers, traders

who buy directly from the pickers, Shea kernel and Shea butter processors and exporters. A more detailed stakeholder involvement in the Shea industry was presented by Lovett (2004) to include Shea nut pickers and post-harvest processors of Shea kernel; local buying agents; rural and urban traditional Shea butter processors; small-scale entrepreneurs formulating cosmetics based on Shea; large-scale exporters of Shea kernel; external large-scale buyers and processors of kernels and butter; external companies formulating cosmetics; and external entrepreneurs formulating edible products, including Cocoa Butter Equivalents (CBEs) or Cocoa Butter Improvers (CBIs).

Because of the poverty reduction focus of the present study, this study focused on the small-scale Shea butter processors as they constitute a large proportion of actors in the industry and also along with Shea nut pickers constitute actors with least capacity to demand their due benefit from their toil. Without support to this group, they are exposed to exploitation by the middlemen who give them pittance and appropriate most of the gains in the industry. Other relevant stakeholders include input suppliers for picking Shea nuts and for processing of Shea butter, financial service providers who provide credit/capital for the business, output market to ensure timely sales of products, research and extension institutions for product development and improvement; NGOs providing a wide range of support services to the industry and; government agencies for policy direction and infrastructure development among others.

Constraints and Prospects of the Shea Industry

The Shea industry holds great prospects for poverty reduction and economic development especially for women in the Northern Regions of Ghana. There is however a number of challenges bedeviling the sector which when addressed can facilitate harnessing the potential of the industry for the economy.

First of all, there has not been a major breakthrough in research for Shea tree with short gestation period to encourage widespread domestication and planting of the tree in the growing areas. The long gestation period of the Shea tree has been attributed to erratic weather conditions (especially drought), genetic factors and the ravaging effects of annual bush fires, a common feature in the savannah zone (Seidu, 2013). The Ghana Cocoa Board established a research station at Bole in 1976 to research into various aspects of Shea development with some modest achievements made in respect of methods of propagation, growth enhancement of Shea nut seedling and management of existing Shea stands among others. However, poor research-extension linkage hamper the efficient adoption of improved technologies resulting in virtually no domestication and cultivation of Shea as a plantation crop by farmers as at now.

In addition, inadequate funding, human and infrastructural capacity, absence of standard methodologies for Shea resource assessment are challenges to Shea sector (COCOBOD, 2012). The reduction of the long gestation period is yet to be achieved and increase loss of Shea tree populations due to charcoal making, land clearing for development of other plantation crops (e.g. mango and cashew),

aging and unproductive existing Shea tree populations all pose challenges to the development of the sector.

Also, studies have reported weak relationships among Shea sector actors and stakeholders horizontally and vertically (COCOBOD, 2012; Scholz, 2010; Seidu, 2013). Hence collaboration and co-ordination in the Shea sector is weak. Intervention efforts in the Shea sector are therefore uncoordinated contributing to a lack of intervention synergy, duplication of efforts resulting in inefficient use of resources, lack of knowledge development and information sharing. Besides an environment of unhealthy competition keep many actors apart. Producers are poorly organized and too weak to engage effectively, and to equitably participate in existing and future Shea value chains. The poor Shea sector co-ordination also limits the provision of professional support for designing, implementing and coordinating any effective Shea sector interventions. Therefore stakeholder co-ordination is crucial for effective producer organizations development and advocacy to influence policy and market.

Another major constraint to the Shea industry is general lack of entrepreneurial competence as a result of high illiteracy most especially in Small and Medium scale Enterprises (SMEs). As such, they lack the capacity to capitalize on market opportunities and exploit new high-valued market niches. Many of the actors in Shea butter processing use traditional methods and equipment in processing their products. They also adopt uncompetitive attitude and approaches to doing business (Seidu, 2013). Figure 1 shows pictures of traditional grinding and milling of Shea nuts.

Figure 1: Traditional Methods of Milling and Processing Shea Butter at Izezi and Izebizi Communities

Source: Seidu (2013)

Access to financial support or loans for pickers, processors' associations and SMEs for their operations is also a challenge. They have to access credit at the market rates or higher from micro finance institution with stringent collateral

requirements which many players in the industry are unable to meet. Also, infrastructure to facilitate marketing of Shea is either non-existent or inadequate (Seidu, 2013). For instance, majority of existing roads in the Shea belt are not in good condition. Pickers have to carry on their heads heavy loads of either Shea nuts or Shea butter for very long distances. There are also inadequate storage facilities in major Shea trading markets or communities. Electricity supply to most of the communities where cottage processing of Shea is done is erratic or non-existent.

In addition, telecommunication facilities in most Shea communities are absent. These make communication among actors located within the communities and their partners difficult. The lack of market information is also a challenge to the industry. Actors do not have information about the potentials which exist in the domestic, regional and international markets. Most often, buyers undertake purchases based on speculations that are not backed by adequate analysis (Esinam, 2010).

Despite the challenges discussed above, the Shea sector has very strong prospects, which can be harnessed to propel the sector as an engine of growth especially for poverty reduction and economic development of Northern Ghana. Some of these are highlighted in the following paragraphs. There is increasing demand for Shea and its products in the local and international markets and this presents opportunities for promoting and sustaining Shea products from Ghana. There is a large domestic consumption of Shea as food, cosmetics, medicine and on special occasions with local consumption estimated at about 55% of the Shea

collected annually (Lovett, 2004; Addaquay, 2004). UNCTAD (2008) asserted that while Africa's share of world exports declined about 50 percent from 1980 to 2007, Shea, a nontraditional export commodity from Sub-Saharan Africa increased in export volume, linking this region to the global economy. Shea is gaining importance on the international market, especially for use in confectionery, medical and cosmetic industries (SAG, 2014).

Also, growing Shea processing capacity in Ghana is an opportunity to increase value addition. Shea is typically used in making cooking oil, and other food ingredients. The chocolate producers appreciate not only the lower price of Shea compared to cocoa, but also its technical qualities specifically its high proportion of mono-unsaturated symmetrical triglycerides (Boffa, 1999). Other uses of Shea in the food industry are predominantly in bakery and pastry products. Shea is also used to formulate cosmetic products, that is body and hair pomades, and also in the pharmaceutical companies among others (Scholz, 2010).

There are also a large number of local initiatives to improve the organization of the value chain and to increase awareness on the part of Shea sector actors to collaborate for the common good of the industry. For example; there is strong evidence of collaborations among the actors in recent times including Private sector investment funds – BUSAC, Export Development and Agricultural Investment Fund (EDAIF), Common Fund for Development (CFD), National/international public sector organizations and NGOs: SNV, MISTOWA (Management Information Systems and Trade Organisations in West Africa), GEF (Small Grants Scheme), TNS, OXFAM and JICA (SAG, 2014).

Political interest in promoting investment in the sector has also received a major boost in recent times especially with the advent of Ghana Shared Growth and Development Agenda (NDPC, 2010). The Government of Ghana has decided to undertake programmes in collaboration with stakeholders to ensure sustained growth and development of the sector. All government efforts are being focused on ensuring effectiveness, sustainability and equity in impacts. A national value chain approach to Shea sector development is also being adopted with Shea tree domestication, value addition, quality improvement, and market access given more attention (COCBOD, 2012).

Ghana also stands a better chance of being a major trade route for the West African Shea market. Ghana's Tema Port is centrally located in the sub-region with sea and road linkages to the Shea producing countries. As an industrial city, Tema has the infrastructure to support trading of the product in the international market. Finally, existence of an institute (CRIG) mandated for Shea research and other institutions with some experience in Shea research exist in Ghana and there are opportunities for collaborative work. Existence of research findings for dissemination to farmers presents an opportunity for establishment of a Shea extension institution. This may facilitate among other things development of Shea trees with short gestation period that can be drought and bush fire resistant and yielding more quality fruits (COCOBOD, 2012).

CHAPTER THREE

LITERATURE REVIEW

Introduction

This chapter reviewed literature relevant to the theme of this study. It discusses the roles of NGOs as development partners; focusing on NGO management, their development activities and other stakeholders of development with NGOs in order to understand the components of NGOs' capability. The chapter also reviews literature on factors affecting technical efficiency as well as measuring technical efficiency. Finally, it looks at poverty measures and linkages to technical efficiency in order to put the analysis of the study in proper perspectives.

A Brief History of NGOs as Development Partners

Non-Governmental Organizations (NGOs) are formalized, private, voluntary, non-profit making organizations set up to complement government efforts in bringing development to the people. That is, they engage in activities aimed at improving the living conditions of the people. The origins of NGOs in Ghana date far back into time whereas in traditional Ghanaian society, people provide assistance to their far and near relations in need. During the colonial era as well, the colonial authorities had no desire in financing state welfare programme for the people. Government social policies were geared towards ensuring the integrity of the structure of colonial administration. For the majority of the rural population however, their welfare was left in the care of charity organizations and missionary societies who exchanged their spiritual calling for

material supports in the area of education, health, agriculture and other social services (Firoze and O'coill, 2011).

The role of NGOs in development can be explained in terms of changes in development discourse over time. The establishment of the United Nations and the Britton Woods Institutions after World War II gave NGOs international recognitions as partners in development. The prevailing thoughts of development at the time included the notion that there is a linear path to development to which all nations and communities aspiring to development must take to ensure growth and development. These thoughts include Rostow's linear stages of growth, Arthur Lewis's two sectors development, and dependency development thesis among others (Todaro and Smth, 2006). As a result, development programmes of international organizations and aid agencies from the US, UK and other European countries in the 1950s and 1960s placed emphasis on large scale infrastructural development, as well as economic and industrial growth (Ebrahim, 2005).

However, when in the 1950s through to 1970s many developing countries achieved economic growth in terms of high GDP growth rate without a corresponding improvement in the living conditions of the vast majority of the people, new thinking of development emerged. Therefore, in the 1970s, emphasis was placed on meeting the basic needs with focus on individuals and families. This was followed by attention on participation, sustainable development and gender equity in the 1980s, and more recently, to issues of economic liberalization, good governance, women empowerment, and environmental sustainability among others.

There are many other terminologies and names that are common to NGOs depending on where they are founded and operated. These include Private Voluntary Organizations (PVOs), Community-based Organizations (CBOs), Civil Society Organizations (CSOs), Non-Profit Organizations (NPOs), Grass-roots Organizations (GROs), Private Service Organizations (PSOs), Grassroots Development Organization (GDO) etc. There are also many criteria used in classifying NGOs. In terms of location, NGOs can be classified into Northern NGOs or international NGOs that are usually located or founded in western industrialized countries and are national or multinational. They can also be classified into Southern NGOs or local, indigenous NGOs that are usually founded and operate in low income, aid recipient countries and less developed areas (Korten, 1987).

In terms of purpose, NGOs can be classified into supply-side and demand-side NGOs (Korten, 1987). The supply-side NGOs are welfare oriented NGOs that provide services directly to local community and rely on volunteers and staff. They are operationally oriented NGOs whose primary purpose is to design and implement development oriented projects in education, health, agriculture, water and sanitation and; economic empowerment among others. Examples of supply-side NGOs include CARE, Plan International, MSF, ADRA, ASFA and World Vision. Demand-side NGOs are those whose primary purpose is to defend or promote a cause. They work to raise awareness, acceptance, and knowledge through advocacy/lobbying work, advancement of beliefs and ideologies and seek to influence public policy. The Steering Committee for Humanitarian Response

(SCHR), Third World Network, ISODEC and Transparency International are good examples of demand-side NGOs.

Korten (1987) also classified NGOs according to the strategies they deploy in their operations as they move from one generation to another. He asserted that NGOs in the first generation usually focus on short term and immediate relief and welfare services for individuals and families with NGOs being the initiators and doers of the development projects. In the second generation, NGOs become mobilizing force for community project development with both the NGOs and the community members acting to solve identified community problems. The third generation of NGOs is characterized by sustainable systems development with a long time strategic management focus of all relevant public and private institutions. Lastly, the fourth generation involves people's movement involving loosely defined networks of people and organizations. Even though there may be overlapping of focus and activities between different generations, this typology at least provide some insight into how NGOs evolve over time.

Structure and Management of Non-Governmental Organizations

Najam (1999) asserted that most international development literature about the rise of the NGOs has tended to be descriptive rather than analytical with focus on individual cases. Furthermore, very little of this literature has been concerned with the structure and management of these organizations but rather cast the roles played by the NGOs in either positive or negative light depending on the normative judgment of the researchers. This lack of attention to the

structure and management of NGOs is an important gap since as James (1998) asserted

> *Management capacity is the life blood of all organizations; irrespective of whether they are private business entities, public agencies, not-for-profit or non-governmental organizations (James, 1998).*

A lot of studies have been conducted to understand management in the world of business and government agencies, for example, Barney (1991), Grant (1991), Hall (1992), and Robert & Dowling (2002). However, arguments have been made to explain or justify seeming lack of interest in NGO management. Firstly, many NGOs are primarily concerned about taking actions to solve problems in emergency situations or address developmental challenges and are reluctant to devote significant amount of time to organization structure and management. This is especially true for many NGOs at the early stages of their evolution (Korten, 1987).

Another reason is the common believe that NGOs should use most of their funds to provide goods and services to their beneficiaries and reduce to the minimum their administrative overheads. While this may be true to some extent, NGOs as well need to take management issues very seriously to ensure efficient utilization of the funds. Again, other NGOs which started as small organizations providing relief and welfare services may find funding opportunities and grow rapidly without having put in place adequate organizational structure and management practices, hence the reluctance. Based on the foregoing, this study

takes a view that management capacity is needed in NGOs as much as it is needed in the private businesses and government agencies.

As strategic management became widely accepted with strategic planning in the private businesses and the public sector, Resource-Based View (RBV) also became popular to study the strategic management of organizations. Scholars have noted that the RBV of the firm is fundamental to understanding the performance of firms (Barney, 1991; Wernerfelt, 1984 and; Wiklund and Shepherd, 2003). RBV builds a comprehensive theory of how various resources affect organizational performance. It asserts that firms have a combination of accumulated tangible and intangible resource stocks that are owned or controlled by the firm such as technological assets, capabilities, human, financial, physical and knowledge –based resources. Therefore, firms that possessed valuable and rare resources would attain a competitive advantage and enjoy improved performance in the short term (Barney, 1991; and Newbert, 2007).

RBV also stresses that resources be combined or bundled so as to yield competitive advantage to the firm since resources are not homogenous but rather heterogeneous and the value of resources depends on the combinations with other resources (Barney, 1991; and Newbert, 2007). Kettle and Fesler (2005) and Fernandez and Rainey (2006) noted that resources are essential for successful organizational change and performance; and also noted that we lack comprehensive empirical knowledge about the relative roles and importance of different resources in achieving organizational goals. Many traditional organization theorists consider resources as central to understanding performance.

For example, Rainey and Steinbauer (1999) hypothesized that organizational effectiveness depends on the utilization of technological resources and the development of human resources. The following paragraphs reviews literature on organizational structure and management. It focuses on the relationships between organizational performance on the one hand and; human resources, physical resources and financial resources of the organization on the other.

In general, resources are assets that an organization might draw on to help it achieve its goals (Bryson, et al 2007). It includes all physical assets, capabilities, organizational processes, firm attributes, information, knowledge et cetera controlled by a firm or organization that enable it to conceive of and implement strategies that improve efficiency and effectiveness (Barney, 1991: 101). There are several classifications of firm resources according to Barney (1991) and Grant (1991). They argued that it was most useful to divide firm resources into four categories: physical capital resources (plant, raw materials, location), human capital resources (skills, knowledge, training, relationships), organizational capital resources (competencies, controls, policies, culture, information, technology) and process capital resources (knowledge, skills, disposition, commitment to communication, leadership and team). Ray et al (2004) also asserts that resources are tangible and intangible assets firms use to develop and implement their strategies. Tangible resources include financial assets and physical assets (Grant, 1991). Intangible resources also include intellectual property assets, (Hall, 1992), organizational assets (Barney, 1991),

reputational assets (Robert & Dowling, 2002) and skills and capabilities (Hall, 1992).

The human resource of an organization consists of the people who work there and on whom the success of the business depends. Bontis et al (2000) defined human resource (capital) as the human factor in the organization; the combined intelligence, skills and expertise that give the organization its distinctive character. The human elements of the organization are those that are capable of learning, changing, innovating and providing the creative thrust which if properly motivated can ensure the long-term survival of the organization.

Inmyxai and Takahashi (2010) apply the concept of RBV to different gender-headed firms in an effort to examine whether male-headed firms out-perform female- headed firms in Lao SMEs. It investigates the effects of firm resources (human, intangible, and tangible resources) on the performance of both gender-headed firms. The study employed ordered probit models to test the performance of male- and female-headed firms for the Lao SMEs and the empirical results show that firm resources have positive effects on both male and female-headed firms with male-headed firms also out-performing the female-headed ones even after controlling for both the size and age of firms. Rainey and Steinbauer (1999); and Holzer and Callahan (1998) hypothesized and confirmed that agency effectiveness depends on the utilization of technological resources and the development of human resources. Boyne (2003) also considered and confirmed resources as one of the five determinants of public service performance with the other determinants being regulation, market, organization and

management. In terms of resources, the study focuses on financial resources such as spending per pupil or number of staff.

Oladipo and Danlami (2011) conducted a study on strategic human resource management and organizational performance in the Nigerian manufacturing sector; the study found that line management devolvement, innovative recruitment and selection system, regular training and development of personnel, equity based compensation system, performance appraisal system, effective career planning system and a robust employee participation in the organization's decisions and actions are the key strategic HR practices that influence organizational performance in the Nigerian manufacturing sector.

Similarly, Danlami (2012) also examined the effects of strategic human resource management and organizational performance in the Nigerian insurance sector with moderating effects of organization's climate. The study results suggest that strategic human resource management alignment, line management training, career planning system, and job definition are the key strategic HR practices that influence organizational performance. Results of the study also suggest that the relationship between strategic human resource management and organizational performance is moderated by organization's climate such organization's structure, level of responsibility, risk involved, warmth and support received, standard expected, conflict resolution mechanism and; extent of identifying with the values of the organization.

Arthur (1994) in a study of 30 US strip mills compared commitment strategy to control strategy and found that firms with a high commitment strategy

had a higher value of productivity and quality than those with higher level of control strategy. Huselid (1995) analyzed 968 US firms to explore the use of high performance work practices and found that productivity and financial performance are influenced by employee skills, motivation and organizational structure. Similarly, Huselid and Becker (1996) created an index of HR systems in 740 firms to indicate the degree to which each firm adopted a high-performance work system; the study found that firms with high values on the index had economically and statistically higher levels of performance.

Becker et al (2001) analyzed outcomes of a number of research projects to assess the strategic impacts of HR practices on shareholder value of high-performance work system and found that high-performance work system makes an impact on shareholder value as long as they are embedded in the management infrastructure. Caliskan (2010) examined the link between business performance, organization culture, and the use of a number of HR practices; the study found the acquisition and development of employee skills and job design including flexibility, responsibility, variety; and use of formal team to be particularly significant for productivity and profitability.

Waiganjo (2012) also reviewed a number of studies examining the relationship between strategic human resource management and firm performance and; concluded that resourcing, training and development; teams and decentralization; information sharing and incentives are the key determinants of firm performance. Kim and Ployhart (2014) examined how organizations may leverage their human resources in terms of staffing and training to enhance firm

performance and competitive advantage before, during and after recession using data from 359 firms with over 12 years of longitudinal firm level profit data. The study suggested and confirmed that selective staffing and internal training directly and interactively influence firm profit growth through their effects on firm labour productivity even after controlling for prior profitability. Other studies that have positive effects of human resources on organization's performance include Perry and Miller (1991) and Pitts (2005).

The physical resources of an organization refer to tangible physical assets of the organization including land, buildings, plants, equipment and logistics, raw materials and finished products among others. According to Barney (1991), physical resources include the physical technology used in an organization, an organization's equipment, its geographic location, and raw materials. In a similar way, Fry et al (2004) argue that physical resources include fixed assets (such as land, building, and equipment), raw materials that will be used in creating products, and general supplies used in the operation of the organization.

Physical resources are relatively inflexible in that they are not readily convertible to cash but are more directly connected with the operation of an organization and the achievement of organizational goals. They should have an estimated useful life of two or more years, not be intended for sale in the ordinary course of business, and be intended to be used or available for use by the entity (ibid). It is expected that a greater amount of general property, plant and equipment has a positive impact on agency performance because greater amount of physical resources can help an agency have better work conditions and

environments that lead to better performance (Fry, 2004). Dewan and Kraemer (1998) and Lee and Perry (2002) also investigated the impact of information Technology investments made in state governments and found a positive impact in statewide economic performance as measured by gross state product (GSP).

Financial resources refer to money available to a business or organization for spending in the form of cash, liquid securities and credit lines. They are basic resources that can be used to acquire other resources such as purchasing equipment, paying workers, and buying advertising (Fry et al. 2004). According to Borch, Huse and Senneseth (1999), financial resources are one of the most important elements in the research based on SMEs resources and strategies. It allows firms to finance production and marketing of products and services. Fernandez and Rainey (2006) in a study on managing successful organization change in the public sector emphasized the need to adequately resource public agency in order for them to achieve their stated objectives.

Henry and Rubenstein (2002) also assert that ample funding is indispensable to provide agencies with the administrative and technical capacity to make sure that they achieve their statutory objectives. Hedges, Laine, and Greenwald (1994) in a study of the effects of differential school inputs on student outcomes also found a positive relationship between school spending and educational performance. Morgan et al., (2004); and Ainuddin et al., (2007) have also found that financial resources such as cash-in-hand, bank deposits and/or savings and financial capital (e.g., stocks and shares) also help explain the level of organizational competitive advantage and performance.

Beck et al (2008) and Riding et al (2012) examined financing sources for SMEs and the proportion of investments financed by external sources including bank debt (from domestic and foreign sources), equity, leasing, supplier credit and development banks including finance from public sector banks and informal sources. Berger and Udell (1998) also argued that firm's growth cycle influences their sources of finance; while start-up SMEs focus on venture capital, established ones can survive with traditional financing sources. Cavusgil (1984) and Tannous (1997) both investigated exporting SMEs and found that their financial needs depend largely on which stage of growth they are. Some firms may also have deferred growth because of financial constraints with the effects of financial constraints being stronger on small firms than large ones (Bell, 1997; Berger and Udell, 1998 and Griffith and Czinkota, 2012).

Whereas business firms derive their funding from the owners and shareholders of the firms and are as well accountable to them, and the state/public institutions are funded from public purse and account to the people through electoral processes; NGOs on the other hand derive their funding from diverse sources and provide goods and services to beneficiaries who cannot directly hold them to account. NGOs spend a significant amount of time raising funds and raising awareness about their programs and mission with various communities, populations, target audiences, and potential supporters. Support comes from multiple sources and varies as to its proportion of the total budget from NGO to NGO.

Meanwhile, NGOs also require human, physical, and financial resources like private business firms and public agencies in order for them to carry out activities to achieve their objectives; hence the need to investigate the extent to which the NGOs in the Shea industry have these resources for them to make meaningful impacts in reducing poverty and creating economic prosperity in their areas of operations.

NGOs and their Development Activities

As development actors, NGOs have become the main service providers in countries where the government is unable to fulfill its traditional role of providing the required goods and services to the people. NGOs are private organizations characterized primarily by humanitarian or cooperative, rather than commercial objective. They pursue activities to relieve suffering, promote the interests of the poor, protect the environment, provide basic social services, or undertake community development in developing countries.

NGOs are a subset of the broader nonprofit sector that engage specifically in international development and are seen as instrumental in changing mindsets and attitudes in addition to being more efficient providers of goods and services (Edwards and Hulme, 1996; Keck and Sikkink, 1998)). NGOs have since the late 1970s been playing an increasingly prominent role in the development sector, widely praised for their strengths as innovative and grassroots driven organizations with the desire and capacity to pursue participatory and people-centered forms of development and to fill gaps left by the failure of states across the developing world in meeting the needs of their poorest citizens.

There are two main categories of development activities engaged by NGOs depending on whether they are supply driven or demand driven. These are provision of goods and services and; advocacy. In their role as service providers, NGOs offer a broad spectrum of services across multiple fields, ranging from livelihood interventions, health service, education service, agricultural development, science and technology development, environment management, population and sustainability to emergency response, democracy building, conflict resolution, human rights, and policy analysis (Lewis and Kanji 2009).

Interests in the contribution of NGOs to service delivery did not rise only because of the limited participation of state services in bringing development to the people, but also because of the NGOs' perceived comparative advantages in service provision, including their ability to innovate and experiment, their flexibility to adopt new programmes quickly, and most importantly, their linkages with the grassroots that offer participation in programme design and implementation, thereby fostering self-reliance and sustainability (Korten 1987; Lewis and Kanji 2009; and Banks and Hulme, 2012). These strengths, it was widely believed, would foster "more empowering, more human, and more sustainable" forms of development (Bebbington, et al 2008).

These grassroots linkages are, after all, the reason Northern NGOs work through local partners, recognizing that objectives and priorities of international organizations may not reflect those at the grassroots, and closer proximity at this level is necessary for more effective participatory designs. In the wake of failed top-down development approach, NGOs were seen to offer the sole organizational

forms that could implement the global commitment to 'bottom-up' approach to development (Kamat, 2004; Hearn 2007). Another advantage of the role of NGOs in service provision is that they provide more satisfactory accounts of programmes, and are seen as a safer alternative in the context of states with limited resources and poor records of corruption and accountability (Harsh et al 2010; and Banks and Hulme, 2012). Operational (service providing) NGOs have to mobilize resources, in the form of financial donations, materials or volunteer labour, in order to sustain their projects and programs. Thus, operational NGOs need to possess an efficient headquarters, bureaucracy, in addition to the operational staff in the field.

NGOs also play significant roles in advocacy for development. They do these by engaging the government and policy makers drawing their attention to areas that needs critical development and are neglected. They also help the citizens and community to identify their needs and how to demand their rights from relevant authorities. Advocacy NGOs will carry out much the same functions as the operational ones, but with a different balance between them. Fund-raising is still necessary, but on a smaller scale and it can serve the symbolic function of strengthening the donors' identification with the cause. External donors may not impose onerous administrative burdens, but supporters still have to be supplied with information on an efficient regular basis. Therefore, despite their differences, both operational and advocacy NGOs need to engage in fund-raising, mobilization of work by supporters, organizing special events, cultivating the media and administering a headquarters (Mostashari, 2005). Only the defining

activities – implementing projects or holding demonstrations – serve to differentiate them.

In reality, the distinctions are not as sharp as the labels suggest. Operational NGOs often move into advocacy when projects regularly face similar problems and the impact of the projects seems to be insufficient. All the large development and environmentally oriented operational NGOs now run some regular campaigns, at least by supporting campaigning networks. Similarly, advocacy NGOs often feel they cannot ignore the immediate practical problems of people in their policy domain. Human rights NGOs and women's NGOs may therefore design programs to assist the victims of discrimination and injustice (ibid). Coalitions of NGOs also play a prominent role in transnational advocacy. Keck and Sikkink (1998) cited contemporary advocacy networks in human rights, the environment, and violence against women, noting such networks have existed for over two centuries, including the women's suffrage and anti-slavery movements in the nineteenth century. However, assessing the effects of these advocacy networks is an arduous endeavor. This is because it is inherently difficult to assess the performance of many NGOs if their outputs, like promoting democracy, are difficult to observe (Spar and James, 2002).

Evaluating NGOs' Development Activities

Performance measurement has evolved over time in the private business and public sectors. Measures of commercial success and performance such as profitability, sales turnover, and investment ratios have a long history in the business sector. However, most instrumental notions of efficiency and

performance measurement did not appear until the beginning of the twentieth century (Hailey and Songenfrei, 2007). By the 1990s, Total Quality Management had become a well-established tool to promote and assess improvements in quality. The 1990s also saw the development of competitive benchmarking techniques, which involve identifying competitors (as well as companies in other industries) who may represent best practice in different activities, functions or processes – and comparing their performance with one's own (Eccles 1998).

Also in the public sector, social cost-benefit analysis was introduced in the 1980s as a way to quantify social effects, and attributing money values to non-monetary benefits. Thus, the quality of health and social services began to be measured with quantitative indicators. But it was in the 1990s that efficiency and effectiveness criteria were applied across the board to gauge performance and test whether public services were providing value for money. A new raft of performance indicators was introduced to allow government to control costs, increase accountability, and improve services (Rees 1992; Carter, Klein and Day 1992). The use of performance indicators also reflects a growing tendency to audit activities in the public domain. However, there is concern that attempts to ensure accountability of much of the public sector using such measures will prove complicated because of the difficulties of attribution, the indirect lines of responsibility and the influence of politics and other external factors (Carter et al, 1992). Some of the techniques that have been employed in both private and public sector and to some extent the non-profit sector include Total Quality Management

(TQM), Benchmarking, the Balanced Scorecard, Performance Prism, Results Based Management, and the Logical Framework (Hailey and Songenfrei, 2007).

Whether as service providing NGOs or as advocacy for development, NGOs development activities need to be monitored and evaluated in order to determine the extent to which they are achieving their core objective of bringing development to the people at the grassroots. This is against the background of a major concern about the extent to which the NGOs' development activities are driven by local needs and realities rather than being incentivized by donor-driven funding environment. Another major concern of NGOs' development activities on participation are grounded in the organizational interests of NGOs, who, given their prioritization of institutional survival, may want to keep power over decision-making. The distribution of funds between themselves and community groups highly unequal, developing and maintaining patron–client relationships with beneficiary communities, rather than garnering their true participation in programmes, and thereby threatening programme sustainability and empowerment outcomes (Banks and Hulme, 2012).

Leeuwis and Van den Ban (2004) developed a typology of community participation in development project in which the beneficiaries are asked to rank their degree of participation at the conception, implementation and evaluation stages of development projects. The following five degrees of participation were identified:

- Receiving information in which beneficiaries of development projects are informed of the benefits the projects will bring to them but are not involved in any decision making.
- Giving information passively: here the beneficiaries are asked questions and are allowed to make suggestions to enable the project implementing body make decisions relevant to the project.
- Consultation entails the beneficiaries asking relevant questions and fully expressing their views without restrictions but the final decision making still rest with the interventionists.
- Collaboration involves both the interventionists and the project beneficiaries jointly identifying the relevant projects and jointly deciding on what to do at every stage of the projects.
- Self-mobilization is the highest form of development participation in which the beneficiaries independently identify the project relevant to their needs and implement same with the project staff providing necessary supports for the project.

NGOs and their Relationships and Partnerships with Other Relevant Stakeholders

NGOs like many other organizations operate only a fraction of their value chain and rely critically on other stakeholders in order to achieve their objectives of bringing development to the people (Burt, 1992). Among the main stakeholders of NGOs in bringing development to the people are the government agencies, donor communities, financial institutions, and input suppliers, output markets,

media organizations and other NGOs among others. This study postulates that having good relationships and partnerships with these organizations and agencies will improve the capability of the NGOs to bring about development in their operational areas.

NGOs in Ghana are regulated by law and are required to register with appropriate government agencies including the District/Municipal/Metropolitan Assemblies, the Department of social welfare, and the Registrar General's Department. All these give legal backing as well as legitimacy to the NGO. Apart from regulatory oversight of government agencies on the NGOs, governments also serve as a major donor for NGOs' development activities in several ways. NGOs that are deemed to be doing a worthy cause in line with governments development agenda may be awarded contract to provide similar services to people in the same or different operational areas.

For example, Werker and Ahmad (2007) reported that a description of USAID contracts with outside actors reveal that of nearly US$20 billion in open contracts, half of the amount went to the private sector with about US$7 billion going to NGOs to undertake projects to improve the welfare of people in developing countries. In the UK, a similar system exists where the bilateral aid agency, the Department for International Development (DFID) awards contracts to both for-profit and non-profit development organizations. According to Reid and Janelle (2006) about 20 percent of the projects contracts of the DFID were awarded to non-profit organizations with further 30 percent jointly competed for by both for-profit and non-profit organizations; the remaining being for-profit

organizations alone. Similarly, Smith and Lipsky (1993) found increasing disbursement of funds from New York City in social service contracts to NGOs.

Theoretical and Empirical Literature on Productive Efficiency

Efficiency studies normally begin with production theory and the concept of isoquants which centres on the relationship between inputs and outputs. The main aim of measuring firm level efficiency is to estimate the models that envelopes all the input/output data with those observations lying on the frontier being described as technically efficient (Alrwis and Francis, 2003). Efficiency denotes the success of producing as large as possible an output from a given set of inputs (Farrell, 1957). Productive efficiency is often viewed from two perspectives: first, technical efficiency to produce the most output with a given level of inputs and second, allocative efficiency to produce a given output at the least cost (as cheaply as possible).

This simplified definition of efficiency is illustrated in Figure 2 (Farrell, 1957). The vector OP shows input combinations of a given firm in an industry. The isoquant SS' is the assumed efficiency frontier for the industry. It is assumed to be convex to the origin and is nowhere positive (ibid). The firm operating at P is inefficient because it could produce on the same isoquant using fewer quantities of inputs X and Y. The firm producing at Q is more efficient because it produces the same level of output as P using OQ/OP of each input. The identity OQ/OP is the technical efficiency of P. The ratio takes the value 1 for a perfectly efficient producer and 0 for a perfectly inefficient firm. It is also important that the

measure of efficiency takes into account prices of the factors in the combination of inputs X and Y. Farrell (1957) states that Q' and not Q will be optimal production if AA' has a slope equal to the ratio of prices of factors X and Y. The cost of production at Q' will be a fraction OR/OQ of production at Q and is denoted as the allocative efficiency of Q. If the observed firm were perfectly efficient both technically and in respect of prices, its cost would be a fraction OR/OP (ibid). The ratio OR/OP is conveniently the overall or economic efficiency of the firm and is equal to the product of technical and allocative efficiencies. There have been several applications and extension of the Farrell model to include the stochastic frontier model. This study focuses on measuring and analyzing technical efficiency of the small scale Shea butter processors and the effects of NGOs' capability.

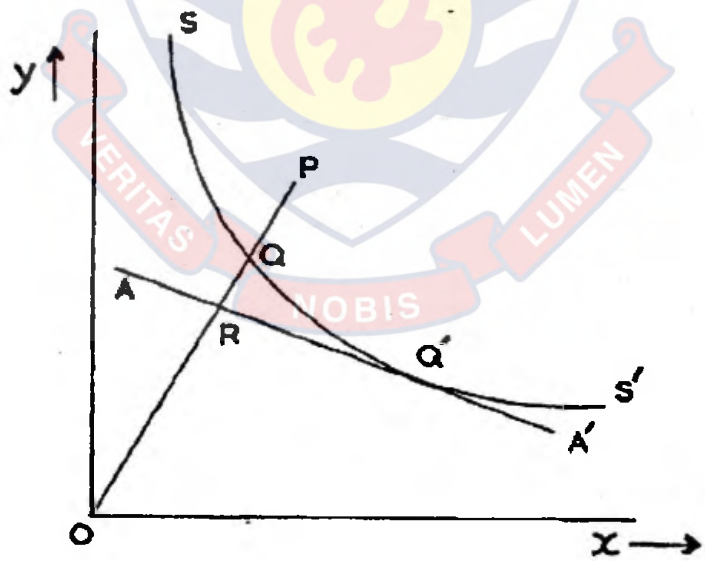

Figure 2: Productive Efficiency

Source: Farrell, 1957

In terms of empirical literature, Ahmad et al (2002) carried out a study on wheat productivity efficiency and sustainability in Pakistan. The results of the study suggest that large farmers are relatively more technically efficient than small farmers. This is because the large farmers possess higher education and have greater access to better irrigation arrangements, extension services, and apply higher doses of fertilizer. They are also financially better off and therefore able to adopt and use modern technologies more effectively and efficiently (Ahmad et al, 2002). Amaza et al (2010) carried out a study to examine the determinants of food crop production and technical efficiency in the Guinnea Savannah of Borno State Nigeria. The results of the study show that farm size, fertilizer application and hired labour are the major factors that are associated with output of crop production. Farmer-specific efficiency factors such as age, education, credit, extension services and crop diversification were also found to account for the observed variation in efficiency among the farmers.

Coelli & Battesse (1996) in a study of factors which influence the technical inefficiency of Indian farmers identified the level of education, farm size and age of farmers as positively related to their technical efficiency. In a study of tobacco farmers in Uganda, Obwona (2000) also found education, family size, credit accessibility, extension services and health status as contributing positively to technical efficiency of the studied farmers. Ayinde et al (2009) investigated technical efficiency and varietal-gap of rice production in Nigeria. The results of the study showed that hired labour, gender, age, fertilizer use, farm size, amount of credit and household size were the main determinants of technical efficiency of

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farmers in Nigeria rice production. According to Seidu (2008), various factors explain technical inefficiencies in Africa's agriculture. A key feature is the prevalence of subsistence needs. When farmers produce subsistence crops, they may be prevented from reaching the efficiency frontier. Inefficiency can also result from socio-economic, demographic and environmental factors.

Ajibefun and Adenegan (2003) conducted a study on the impact of policy changes on technical efficiency of food crop farmers in Ondo State Nigeria. The study quantitatively assessed the impact of policy changes on technical efficiency of small scale food crop farmers using the Cobb-Douglas stochastic frontier methodology. The study results show that the elasticity of mean value of farm output is an increasing function of land, labour and implements. The mean value of farm output was also estimated to be an increasing function of agrochemicals and seeds. The results of the study also indicate that an increasing return-to-scale exists among the farmers. The results of the study also show a wide variation in the estimated technical efficiencies ranging from 0.22 to 0.89. Finally, the results of simulation on policy variables show that the level of technical efficiency would significantly increase with rising level of education, farming experience and amount of credit used and decline with the age of the farmers.

Theoretical and Empirical Literature on Poverty

Poverty is generally examined in academic literature from two major angles. Poverty as determined by micro-level household and individual characteristics such as household size, education and gender of household head, location and farm size among others on the one hand; and aggregate macro-level

economic indicators measured on a country level on the other. Studies on the micro-level are especially relevant for this study and the review focus on this approach to identify the effects of individual and household characteristics on poverty outcomes and possible linkages with efficiency of the workers. This is because effective and well-directed policies to alleviate poverty require not only understanding of the factors that affect poverty but quantitative magnitude of these effects.

Poverty level and welfare of an individual or household can be determined using various factors and indicators. However, there are two main ways of measuring welfare of rural households. The money-metric and the non-money-metric measure. There is also the use of both measures together (Finan et al, 2005).

The money-metric measure of poverty usually comprises of the use of income as a measure of economic welfare. This type of measure has the assumption that income provides a means by which a household can have access to resources to generate utility. But according to Haughton & Khandker (2009), this is not always the case. There are theoretical and practical difficulties with using income as a proxy for welfare. Individuals in developing countries are known to be reluctant to declare their income or they sometimes underestimate their income (GSS, 2008). Sahn & Stifel (2003) have also observed that income is not the best measure of poverty especially for households predominantly involved in agriculture and self-employed labour activities. To them, income is sensitive to shocks and can be a poor indicator of long-term welfare.

The non-money-metric measure includes the use of human capital index, or asset index, or physical and mental health indices or social capital index to measure welfare. The asset index basically measures the welfare of a household using the household's ownership of certain consumer durables (such as TV, radio, bicycle, mobile phones, fridge, and vehicles among others). It also measures characteristics of the household's dwelling and their ownership of land, cattle and other livestock. According to Filmer & Pritchett (1998), the asset index measurement has less measurement errors as a measure of long-run wealth. The asset index also provides sufficient information to identify and profile the poor. As a result, the use of asset index is becoming increasingly popular in welfare measures. Other studies that have employed asset index as a measure of poverty include Booysen et al (2008), and Sierminska, Brandolini & Smeeding (2008).

Since poverty is multidimensional concept, employing multiple indicators to analyze it is important. Some studies such as Finan et al (2005) have constructed a welfare index comprising of both money-metric and non-money-metric indicators to measure welfare. The study applied the principal component analysis to measure welfare index using various characteristics including household assets, household consumption expenditure and non-farm labour income; and access to water and electricity.

In terms of empirical literature, Grootaert and Braithwaite (1998) undertook a comparative analysis of poverty in three European countries (Bulgaria, Hungary and Poland) and three countries of the former Soviet Union (Estonia, Kyrgyz Republic and Russia) by estimating welfare, poverty and

poverty gap with the use of OLS, probit and tobit regressions respectively. The results of the study indicate that household assets, household size, employment status and location of the household were the main determinants of poverty in the study areas. The study recommended among other things development of social safety nets for households based on the number of children, lack of ownership of assets, and unemployment.

Finnie (2000) also examined determinants of poverty in Canada using a standard panel logit model. The study examined annual entry and exit from poverty for those currently out of poverty and in poverty respectively. The study found that age, gender of household head and location of residence serve as good indicators of the probability of one's falling into poverty and the amount of time one will spend in poverty. Annim et al (2012) also investigated the relationship between district-level inequality and household poverty in Ghana. The results of the study suggest that between-district and within-district inequalities have some effects on household poverty prompting a recommendation that poverty reduction strategies will benefit greatly if disparity in welfare is taken into consideration.

Asogwa et al (2012) analyzed the relationship between poverty and efficiency among the farming households in Nigeria using farm level data from Benue State. The results of the study show that there is a significant negative correlation between poverty level and technical efficiency estimates among the respondent farmers. The implication is that as technical efficiency estimate increases, poverty level decreases. The findings of the study also suggest that

technical efficiency play a more significant role than allocative efficiency in reducing poverty among the respondent farmers.

Theoretical Framework of the Study

This study is motivated by two main theories; the first is a theory of 'working poverty' which suggest a growing incidence of poverty among the working people in Africa and beyond (Domfe, 2013; Osmani, 2003 and Osinubi, 2003) and the second is the theory of NGO management proposed by Lewis (2001). For the first theory, it is argued that there is significant proportion of working people who are unable to command sufficient resources to satisfy their basic nutritional and non-food essentials on daily basis. Many reasons have been assigned to why a significant number of working people in Africa remains poor.

Two most widely cited reasons for working poverty in Africa and elsewhere are under-employment and technical inefficiency. For example, the International Labour Organization (ILO, 2005) developed a Labour Force Framework (LFF) in which it categorized people into four according to their labour market activities within a specified short reference period, either a day or week. These are economically inactive, unemployed, underemployed and the employed. It argues that effort at reducing poverty should not only be focused on the first two categories, that is, the unemployed and the economically inactive but also on the underemployed categories of working population.

Research into technical efficiency and labour productivity has received much attention since the inception of neo-liberal economic policies (Abatania et al (2012); Agbo et al (2013); Ahmad et al (2002); Ajao (2012); Al-hassan (2008);

and Amadou (2007). The term technical efficiency can be described as the effectiveness with which a given set of inputs is used to produce an output. A firm is said to be technically efficient if it is producing the maximum output from the minimum quantity of inputs such as labour and capital. Labour efficiency measures the difference between observed and optimal values of output obtainable from inputs used by a worker. Likewise, the International Labour Organization (ILO, 2003) recommends improvement in labour efficiency or productivity as a tool to reduce poverty. It is argued that as labour efficiency increase, the earning capacity and income of workers also increases and this leads to poverty reduction.

With respect to the theory of NGO management, Lewis (2001) opined that most literature on NGO management had tended to be descriptive rather than analytical usually with a focus on individual cases. He proposed an NGO management framework which comprises 3 main areas; the internal management structure of the NGOs, their development activities and the relationships and partnerships with other relevant stakeholders in development. This stems from the recognition that NGOs are distinct part of the third sector organizations with the main objective of reducing poverty and facilitating development. Thomas (1996) argued that what makes NGOs management distinctive is that, it is focused on the achievement of social goals outside the organization rather than on the internal objectives such as profit making. In addition, NGOs differ from the business organizations and government agencies because there is no clear link between the

providers of funds and the users of services provided by the NGOs (Hudson, 1995).

A synthesis of the two theories above therefore yielded a theoretical framework for the present study whereby it is proposed that the Non-Governmental Organizations (NGOs) in the Shea industry seek to reduce poverty and facilitate economic development for the actors especially the small scale Shea butter processors. They must also however have needed capability derived from their internal management structure, development activities and; relationships and partnerships with other stakeholders in development in order to be able to make the changes they desire in the beneficiaries of their activities. NGOs with higher capability index are therefore expected to contribute to improve the technical efficiency of their beneficiary small scale Shea butter processors and this is expected to lead to a reduction in poverty among the beneficiaries.

Conceptual Framework of the Study

The main conceptual framework adopted for this study is based on the assumption that there is high incidence of poverty among the working population of Ghana, Africa and beyond as has been documented in many studies (Domfe, 2013; Osmani, 2003; Osinubi, 2003 and; Joassart-Marcelli, 2004). It is further conceived that the problem of poverty can be addressed by improving the efficiency of the workforce to produce better and increase their earning capacity and income. The Non-Governmental Organizations (NGOs) in the Shea industry are providing various services to help improve the efficiency of the actors especially the small scale Shea butter processors. The NGOs must also however

possess the needed capability derived from their internal management structure, development activities and; relationships and partnerships with other stakeholders in development in order to be able to make the changes they desire in the beneficiaries of their activities.

The internal management structure of the NGOs are measured by the human resource, office, equipment and logistics; and financial resources. The development activities of the NGOs are assessed based on their relevance, effectiveness, efficiency, impact and sustainability. The relationships and partnerships of the NGOs with relevant stakeholders in development including government agencies, donor communities, financial institutions, input suppliers, output markets, media organizations and other NGOs are also examined. It is postulated that the higher the NGO scored on this capability index, the better it is expected to be the technical efficiency of the beneficiaries of their activities and the less poverty among them. Figure 3 represents the conceptual framework of the study showing the empirical linkages between NGOs' capability and small scale Shea butter processors' technical efficiency and poverty outcomes in the Northern Region.

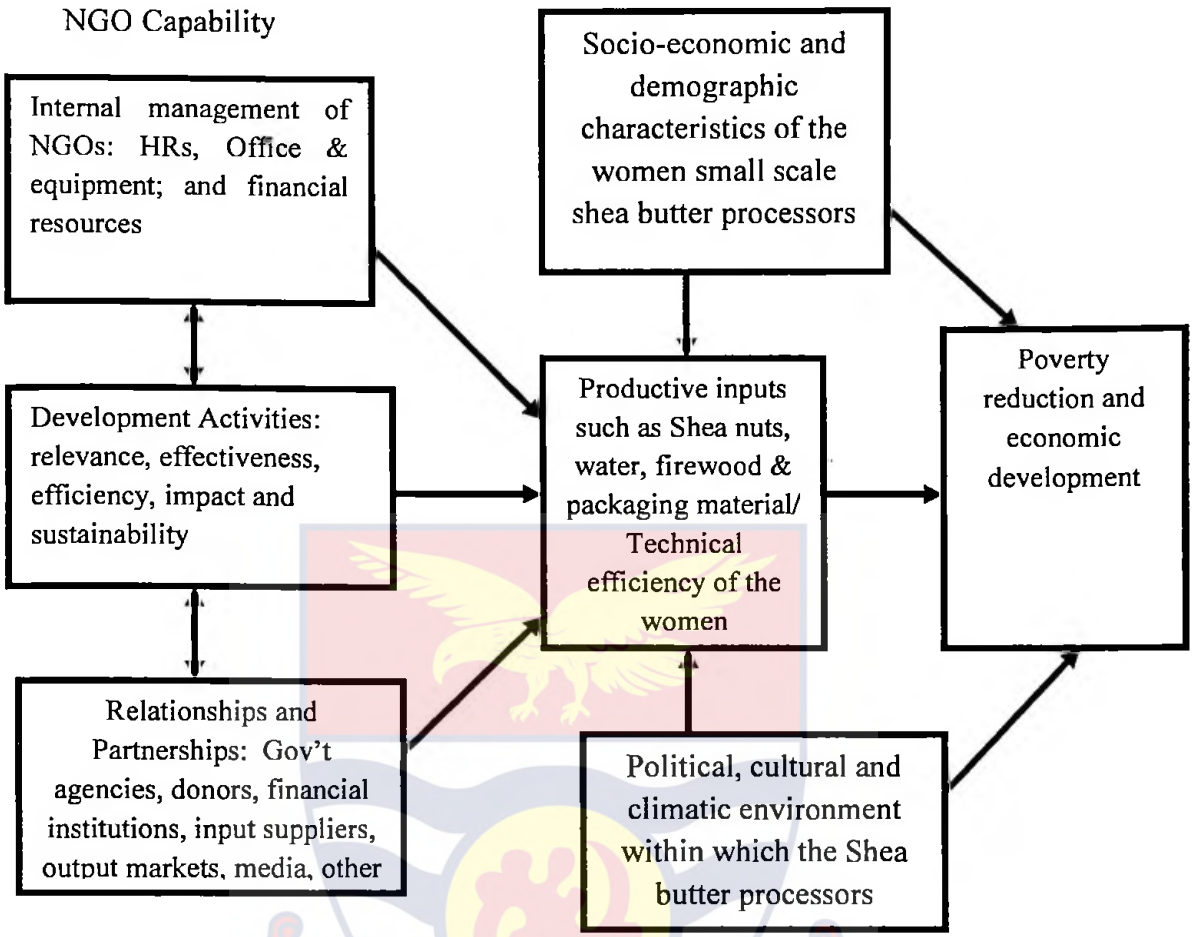

Figure 3: Conceptual Framework Showing the Empirical Linkages between the NGOs' Capability and the Women Technical Efficiency and Poverty

Source: Author's construct

Conclusions

This chapter reviewed literature relevant to the theme of the present study with focus on NGO management of internal structure, development activities, and partnership with other stakeholders in development to understand components of NGOs' capability. It also reviewed theoretical and empirical literature on technical efficiency and poverty. It is clear from literature reviewed that not much has been documented with respect to computing capability index for NGOs as

much as witnessed for performance assessment for the private business and public sectors. Also, given that private businesses and the public sectors are accountable to their shareholders and the public necessitate different sets of criteria for assessing the NGOs. This study therefore seeks to construct the capability index for the NGOs as a first step towards assessing the NGOs in the Shea industry in particular and other NGOs in similar context in general.

The review also showed that many studies have been conducted to examine different factors that affect technical efficiency in the agricultural and informal sectors with some policy implications. However, the role of NGOs in improving technical efficiency has not been given attention in literature. Meanwhile, technical efficiency to improve the quantity and quality of Shea butter production for domestic consumption and export has become an important issue in recent times. Also, a study of empirical linkages among capability of NGOs and technical efficiency and poverty outcomes of the small scale Shea butter processors appear plausible given some studies such as Asogwa et al (2012) that have established inverse relationship between technical efficiency and poverty.

CHAPTER FOUR

RESEARCH METHODS

Introduction

This study seeks to assess the empirical linkages between NGOs' capability and small scale Shea butter processors' technical efficiency and poverty outcomes in the Northern Region of Ghana. The present chapter discusses the approaches employed to achieve the specific objectives of the study. It covers areas such as the philosophical and sociological underpinnings of the study, design of the study, study area description, research population, data sources and types. It also discusses the sampling procedure including the sample size determination, sampling methods and techniques and a summary of the composition of the sample used. It also covers data collection instruments and how they fit into the research objectives, how content and construct validity was assured, the strengths and weaknesses of the instruments, pre-testing and finalization of the instruments. The chapter also presents the analytical framework of the study. Data collection procedures were also explained including when and how data was collected and by whom; and problems encountered during data collection and how they were mitigated. Finally, the chapter discusses data processing and analysis.

Philosophical and Sociological Underpinnings of the Study

This study is guided by a number of research paradigms which influence the approach and design of the study. Traditionally, different philosophical perspectives have been identified with different methodologies adopted in

conducting social science research. For instance, the positivists use quantitative methods extensively where as critical theorists commonly adopt the qualitative methods (Ahiadeke, 2008). The positivist approach is based on the observation of data to expand verifiable knowledge which enables a social scientist to understand, explain and predict empirical reality (Ahiadeke, 2008). Positivist approach to social science research is modeled on the methodology of the natural sciences where by data are considered reliable and valid if they are value free, that is, free from judgments of a personal, cultural, moral or political nature. The researcher is thus considered to be objective. But can scientists and researchers be objective and value free?

Some amount of criticisms has been leveled against the positivist approach especially from those who adopt critical theory and feminist perspectives. Critical theory in particular denies the objective nature of knowledge but concerns itself with the dynamic nature of knowledge moving towards an understanding of the world and of the knowledge which structures our perceptions of that world. One feminist researcher, Smith (2003) also raised the questions of the 'context of discovery' in which issues and problems to be studied are identified and constructed in the first place. He argued that researchers' language, class and place of birth; age and experience profoundly shape what they do in their professional lives and argued that to ignore autobiographical origins of claims is to misinterpret and mystify the actual meanings intended. While this study largely adopted the objectivity stand of the positivists, it however acknowledged and took cognizance of the genuine criticism of the approach to guide this study.

The Design of the Study

This empirical study is designed as a cross sectional survey employing mainly quantitative data and approach to assess the empirical linkages between NGOs capability, small scale Shea butter processors' technical efficiency and poverty outcomes in the Northern Region. In cross-section study, either the entire population or a subset thereof is selected, and from these individuals, data is collected to help answer research questions of interest. It is called cross-sectional because the information that is gathered represents what is going on at only one point in time. In this type of study all the measurements are made at about the same time, with no follow- up period (Olsen and St. George, 2004, Sudman et al, 1996 and Tourangeau et al, 2000). Cross-sectional designs are well suited to the goal of describing variables and their distribution patterns by taking an appropriate sample from the population and looking at distributions of variables within that sample.

A major advantage of cross-sectional studies is that there is no waiting around for the outcome to occur. This makes them fast and inexpensive, and avoids the problem of loss to follow-up. Cross-sectional studies are valuable for providing descriptive information about prevalence, and have the advantage of avoiding the time, expense, and dropout problems of a follow-up design. They are often useful as the first step of a cohort study or experiment, and can be linked in independently sampled serial surveys to reveal population changes over time (Olsen and St. George, 2004). However, a major disadvantage of cross-section is that it's often difficult to establish causal relationships from cross-sectional data

(Sudman et al, 1996). This study therefore adopted cross-sectional survey design based on the advantages identified and also being mindful of the shortcomings identified.

A Brief Description of the Study Area

The Northern Region, which occupies an area of about 70,384 square kilometers, is the largest region in Ghana in terms of land mass. It shares boundaries with the Upper East and the Upper West regions to the north, the Brong Ahafo and the Volta regions to the south, Togo to the east, and Côte d"Ivoire to the west. The land is mostly low lying except in the north-eastern corner with the Gambaga escarpment and along the western corridor. The region is drained by the Black and White Volta rivers and their tributaries such as the Nasia and Daka rivers (GSS, 2013).

The climate of the region is relatively dry, with a single rainy season that begins in May and ends in October. The amount of rainfall recorded annually varies between 750 millimetres and 1,050 millimetres. The dry season starts in November and ends in March/April with maximum temperatures occurring towards the end of the dry season (March-April) and minimum temperatures in December and January. The harmattan winds, which occur from December to early February, have a considerable effect on temperatures in the region, making them vary between 14°C at night and 40°C during the day. Humidity is very low, aggravating the effect of the daytime heat (GSS, 2013).

The rather harsh climatic conditions adversely affect economic activities in the region. The main vegetation is grassland, interspersed with guinea savannah

woodland, characterised by drought-resistant trees such as acacia, (*Acacia longifolia*), mango (*Mangifera*), baobab (*Adansonia* orks *digitata* Linn), Shea nut (*Vitellaria paradoxa), dawadawa, and neem (Azadirachta indica).* Majority of the people in the region are engaged in agriculture. The crops that they produce include yam, maize, millet, guinea corn, rice, groundnuts, beans, soya beans and cowpea. At Gushie in the Savelugu-Nanton District, there is a large plantation of grafted mangoes cultivated by outgrowers. Bontanga in the Tolon Kumbungu District has a big irrigation dam where farmers engage in large-scale rice cultivation during the dry season (GSS, 2013). Other livelihood activities in the region are rearing of cattle, sheep, goat and pigs. The main industrial activities in the region include agro-processing such as rice milling, Shea butter processing, vegetable oil extraction, cotton ginning and textile or smock making. Other important economic activities include: vehicle repairs, pre-fabrication of spare parts, manufacturing of farm implements, pottery and carpentry.

The Shea tree occurs over almost the entire area of Northern Ghana, over about 77,670 square kilometers and supports the livelihood of approximately 900,000 rural women involved in the sector in Northern Ghana (SNV, 2011). There is a Shea nut processing factory located at Buipe and many women in the region are engaged in retail trade of Shea products and other consumer goods. The factory also exports processed Shea butter products to the US, Europe, China and other parts of the world.

At Kukuo, a suburb of Tamale, there is a Teaching Hospital that not only provides health services for the people of the Metropolis and the region as a

whole, but also serves as a referral point for patients from other health facilities. The satellite campuses of the Faculty of Agriculture and the School of Medicine and Health Science of the University for Development Studies are situated at Nyankpala in the Tolon Kumbungu District and Dungu, a suburb of Tamale, respectively.

The main administrative structure in the region is the Regional Coordinating Council (RCC), headed by the Regional Minister, who is also the Chairman of the Regional Security Council (REGSEC). The region also has 26 districts and 31 political constituencies. In terms of traditional social structure, there are four paramount chiefs in the region. They are: the Ya-Na, who is the overlord of Dagbon in Yendi; the Nayiri of Mamprugu in Nalerigu; the Bimbilla Naa of Nanung in Bimbilla and the Yagbonwura of the Gonja Traditional area in Damongo (GSS, 2013). Figure 4 depicts a map showing the study area and the Shea belt.

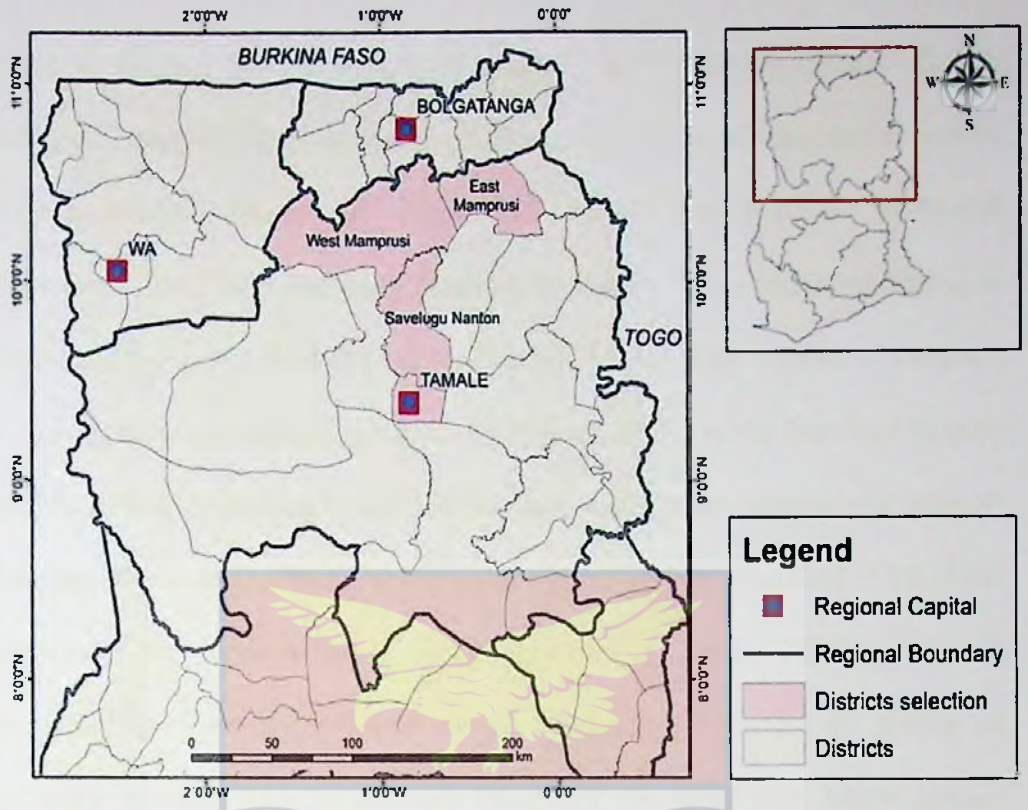

Figure 4: Map Showing the Study Area and the Shea Belt

Source: Northern Regional Co-ordinating Council, June 2016

Study Population

The population for this study comprises small scale Shea butter processors in the Northern Region of Ghana. The sampling frame for this study was obtained from Shea Network Ghana (SNG). SNG is a civil society platform and a network of all Shea actors in Ghana that seeks to protect Shea from destruction and promote the industry among others. The network membership is a composition of buyers, producers, processors, researchers, NGOs and governmental organizations in the Shea industry. The network strive to co-ordinate interest groups operating within the Shea industry to harmonize industry relationships and engineer a common voice to advocate for enabling policy or regulatory environment for Shea

activities in Ghana. SNG's primary interest is in identifying, characterizing, assessing and supporting Shea butter processors in terms of training, access to favourable market conditions, access to credit and general livelihood empowerment. SNG therefore has a database of almost all the NGOs operating in the Shea industry in the Northern, Upper East and Upper West regions of Ghana.

From SNG's record, it has about 35 affiliate NGOs in the Northern Region that provide diverse services to small scale Shea butter processors mostly through their cooperatives. Also in total, about 118 cooperatives are identified in 18 of the 26 districts of the Northern Region comprising a total of about 3,780 individuals having benefitted from the activities of the NGOs in 2016 about 96 percent of whom were women. The 35 affiliate NGOs of the SNG and 3,629 women representing about the same number of households therefore constitute the population for the study. It was discovered that men members of the cooperatives were not into Shea butter processing but serve in most cases as secretary or administrator to the women cooperatives.

Sampling Procedures

This study was guided by a number of factors to determine the suitable sample size for the achievement of the study objectives. These factors include population size, the level of precision or sampling error required, the level of confidence or risk and the degree of variability in the attributes being measured (Biemer & Lyberg 2003; Miaoulis & Michiner, 1976). The degree of precision or sampling error is the range in which the true value of the population is estimated to be. For example, if a researcher found an attribute in 70% of the sample with a

pre-determined ±5% precision rate, he or she can conclude that 65 to 75 percent of the population has that attribute. The degree of variability in the attributes being measured also indicates how homogenous or heterogeneous the population is with respect to those attributes with a more heterogeneous population requiring larger sample size.

There are several approaches to determining the sample size. These include using a census for small populations, following the sample size adopted by similar previous studies, using published tables and applying formulas (Israel, 1992). According to Israel (1992), for a large population, the following formula can be used to obtain a representative sample size:

$$n = Z^2pq/e^2$$

where n is the sample size, Z^2 is the abscissa of the normal curve that gives the desired confidence level of 95%, p is the estimated proportion of an attribute that is present in the population, and q is 1-p, e is the desired level of precision.

Given Z = 1.96 (obtained from statistical table), p = 0.5, q = 0.5 and e = 0.05

$$\rightarrow n = 1.96^2 * (0.50)(0.5)/0.05^2$$

Therefore n = 384

Israel (1992) also indicated that given a small population of less than 10,000, this number can be adjusted downward. For this study, we also consider the design effect which describes the loss of sampling efficiency when using a complex sample design such as multi-stage sampling technique which requires a larger

sample size to achieve the same level of precision. We also sought to ensure high response rate by administering the questionnaire at the processing centres where most of the women could be located during the day and to replace any missing respondent with next person on the list. Based on the above considerations and resources available for the research, I settled on a sample size of 203 respondents. Given the homogeneity of the population and that the population size is small; the sample size can be used to perform all statistical analysis to achieve the objectives of the study.

This study adopted the census method for the NGOs since their number was small and therefore sought to collect relevant data from all the NGOs in order to address the objectives of the study. However, only 26 out of the 30 questionnaires administered were responded to and returned despite tremendous efforts put forward from January to April, 2017 to collect the questionnaires. The analysis is therefore based on the 26 questionnaires received.

With respect to the small scale Shea butter processors, multi-stage sampling was employed to select the households used for this study. Multi-stage sampling is a more complex form of cluster sampling which contains two or more stages in the sample selection. In simple terms, large clusters of population are divided into smaller clusters in several stages in order to make primary data collection more manageable. For this study, six out of the eighteen districts covered by the activities of the affiliate NGOs of Shea Network Ghana were purposefully selected to reflect rural/urban dynamics of the districts. Therefore, three districts that are predominantly rural were selected namely; Sawla-Tuna-

Kalba (86% rural), Nanumba South (82.1% rural), and Tolon-Kumbungu (92.5% rural). Also, three districts that are relatively urban were selected namely; Tamale Metropolis (73.8% urban), Savelugu (39.7 urban) and East Mamprusi (32.4%) (GSS, 2013). However, it became clear on reaching the field for pretesting that most respondents in the predominantly rural districts do not engage in Shea butter processing all year round but process only when they have Shea nut they collected themselves and when orders are specifically placed for them to process for ready market. Consequently, the predominantly rural districts were dropped and West Mamprusi added to the three urban districts because it was also relatively urban and they also have women in all year round Shea butter processing.

In each district, the households used for the study were selected using systematic sampling from the list of Shea butter processors in the selected Shea butter processors' cooperatives. For Tamale Metropolis, the respondents were from Kumbayili, Vittin, Malishegu, Kpanvo, Jisonayili and Kalariga. Respondents for Savelugu district came from Tarikpa, Tampion, Sakpuli, Libga, Lang and Yemo. Respondents for East Mamprusi came from Nalerigu, Gambaga, Nagboo, Zambulugu and Zaarantinga. For West Mamprusi, the respondents came from Gbimsi, Tampulungu, Zaari and Kukua. Because the number of members varied from one cooperative to the other, the number of households selected from each cooperative is a constant percentage of the total for each cooperative to yield a total sample size of 203 households for the study. The population and sample size from each district is presented in Table 1.

Table 1- *Composition of survey respondents*

District	Population	Sample
Tamale Metropolis	323	64
Savelugu	325	64
East Mamprusi	153	31
West Mamprusi	227	44
Total	1,028	203

Source: Field Survey, Akosile (2017)

Types and Sources of Data for the Study

Both secondary and primary data sources were employed to achieve the objectives of this study. Secondary data refers to data that was collected by someone other than the user and contains processed information that is readily available to be utilized. Secondary data sources for the present study include census data from Ghana Statistical Service, information from government departments, organization records, journal articles and policy documents among others. Secondary data was collected to better understand different aspects of the study including the operations and management of NGOs, Shea butter processing activities, measuring technical efficiency and poverty.

There are two main sources of primary data for this study, the NGOs that provide services to small scale Shea butter processors and their beneficiary small scale Shea butter processors. Data from the NGOs covers a wide range of issues including their human, physical and financial resources; their development activities in terms of their relevance, effectiveness, efficiency, impact and

sustainability. Also, data were also collected on NGOs and their relationships and partnership with other relevant stakeholders in development such as government agencies, donor communities, input suppliers, customers, the media and other NGOs. With respect to the small scale processors, data was collected on their demographic characteristics, production and marketing activities; livelihood and welfare issues as well as access to basic social services such as education, health, water and sanitation among others. The primary data collected guided the study to analyze the NGOs capability index in terms of human resource, development activities and relationships and partnerships; it also guided estimation of the technical efficiencies as well as poverty profiles of the women small scale Shea butter processors.

Data Collection Instruments

Data collection instruments are the tools for data collection. They include questionnaire, interview, and observation. Essentially the researcher must ensure that the instrument chosen is valid and reliable. The validity and reliability of any research project depends to a large extent on the appropriateness of the instruments used in data collection. The main instrument of data collection for this study is structured questionnaire for the NGOs and interview schedule for the small scale Shea butter processors in order to solicit relevant information from the two groups. However, to validate the results of the quantitative analysis, key informant interview with SNG coordinator as well as direct observation during field visits were also used to seek clarification on important issues addressed by the questionnaires. This is known as triangulation in which data from different

sources are combined in order to better understand the phenomenon under study. The idea of triangulation is that one can be more confident with the results of a study if different methods or sources of data lead to the same results.

Questionnaire Design and Administration

A questionnaire is a way of collecting data by engaging in a special kind of conversation with the subjects of your research which could take place face to face, by telephone or even via the mail (Rattray & Jones, 2007). The questionnaire has certain rules that separate it from usual conversations. The researcher decides what is relevant to his or her study and may ask questions that are relevant to address the objectives of the study being conducted (Czaja, 1998; Rattray & Jones, 2007; Rothgeb et al, 2001). These questions should be both understandable and relevant to the purpose of the research. The respondent in turn may refuse to participate in the conversation and may refuse to answer any particular question. But having agreed to participate in the study, the respondent has the responsibility to answer questions truthfully (Olsen and St. George, 2004).

The design of the questionnaire refers to the directions or instructions, the appearance and format of the questionnaire and, of course, the actual questions. As a rule, it is best to use the simplest possible word that can be used without sacrificing clear meaning (Schuman & Presser, 1996; and Voicu, 2008). It is the responsibility of the researcher to ensure that the questions are framed so as to ensure comprehension by the respondents (Fowler, 1995). Comprehensible questions are characterized by vocabulary appropriate for the target population; it should have simple sentence structure with little or no ambiguity and vagueness.

The researcher usually knows a great deal about the topic of the questionnaire, and it may be difficult to remember that others do not have that special knowledge. In addition, researchers tend to be very well educated and may have a more extensive vocabulary than people responding to the questionnaire. The study therefore took cognizance of this fact and the questionnaires were design and questions constructed to ensure easy comprehension. In order to ensure reliability and validity of the questionnaire, a pretesting was conducted on a sample of 5 NGOs and 30 small scale Shea butter processors from Tamale Metropolis on their productions and household demographic and consumption information.

Reliability is the degree to which measures are free from errors and therefore yield consistent results. If an instrument, for example, a questionnaire or a thermometer consistently assigns the same score to individuals or objects with equal values, the instrument is considered reliable. A reliable questionnaire item is therefore an item that consistently conveys the same meaning to different respondents so that differences in responses reflect the positions of the respondents on the question and not due to misunderstanding of the question. Two dimensions underlie the concept of reliability, that is, repeatability over time and homogeneity or internal consistency of the measure (Creswell and Miller, 2000). A number of factors can affect the reliability of a measurement including subject reliability factors; observer reliability factors; situational reliability factors; and data processing reliability factors due to manner in which data is handled, for example coding or miscoding (Golafshani, 2003; Tavakol & Dennick, 2011).

With respect to validity of the instrument, it measures the extent to which the instrument actually measures what it purports to measure (Kimberlin & Winterstein, 2008). This study therefore sought to establish the face validity, content validity and construct validity of the questionnaires. Face validity measures the understanding and acceptance of the questionnaire items by investigators and respondents as being logical on the face of it. Content validity considers whether or not the items on a given questionnaire accurately reflect the theoretical domain of the latent construct it claims to measure (Saffi et al, 2010). Items need to effectively act as representative sample of all the possible questions that could be derived from the construct (Devellis, 1991; and Gregory, 1992).

In the social sciences where constructs involved are innately intangible, their measurement depends on the operationalization of variables deemed to be representative of the domain. In this respect, there is no set of exhaustible measures that represent a given construct (Benson, 1998). Similarly, construct validity of a measure is directly concerned with the theoretical relationship of a variable to other variables. It is therefore necessary to operationalize the construct by establishing hypothesized relationship between the construct of interest and other related constructs (Carmines and Zeller, 1987). For example, NGO capability is a construct in this study and three dimensions of NGO capability are established as internal management structure, development activities and; relationship and partnerships with other stakeholders of development with each of them operationalized with a number of relevant variables.

Reliability tests were conducted on the pretested questionnaires and Cronbach alpha results with values greater than 0.7 show that the questionnaires were good instruments to collect the necessary data from the respondents.

Analytical Framework of the Study

Objective 1: To construct a capability index for the NGOs in the Shea industry in the Northern Region in terms of their internal management structure, development activities and; relationships and partnerships with other relevant stakeholders in development.

There are a number of Non-Governmental Organizations (NGOs) providing a wide range of support services to the Shea industry to improve the efficiency and productivity of actors including group formation, training, input and equipment supply, and facilitating access to markets among others. For these NGOs to make meaningful contributions and help reduce poverty of actors in the Shea industry, they must also have the capability to effect the changes in terms of their internal management structure, development activities and partnerships with other stakeholders in development in their areas of operation (Alimin et al, 2012). There are no previous empirical studies that have constructed a capability index for NGOs in Ghana or elsewhere to the best of our knowledge. Therefore, this study seeks to develop the theoretical proposition by Lewis (2001) in order to construct a capability index for NGOs in the Shea industry with implications for other NGOs operating in similar socio-economical contexts.

There are two main types of research on organizational performance; while some studies focus on the development of measurement criteria for

effectiveness; others predict effectiveness using independent variables (Campbell 1977; Riccio, Bloom, and Hill 2000). The former ask what elements constitute organizational effectiveness or performance; the latter ask what factors influence performance. The present study seeks to develop measurement criteria for NGO capability to serve as reference point for future research on NGO performance in Ghana and elsewhere. In computing the capability index, the researcher sought the opinion of SNG coordinator because of his experience with the NGOs in the Shea industry and a researcher who has done some studies with the NGOs in the Shea industry and their suggestions and advice shaped the computation of the index. A composite variable (an index of NGO capability) with a total value of one hundred (100) is obtained and the higher the score for any NGO, the more capable the NGO is described.

Internal Management of NGOs

To measure the internal management structure, we look at the human resources, physical resources (office, equipment and logistics); and financial resources.

Human resources of the organization refer to the people (employees) that utilize other resources of the organization in order to achieve organizational and individual goals. Human resource management is therefore a strategic function that encompasses management of its critical human assets for gaining competitive advantage and involves all management actions and decisions that affect the nature of the relationship between the organization and its employees (Armstrong, 2006). A number of studies have focused on human resource as a major asset of

any organization to boost their competitive advantage and improve their overall performance. In order to determine how well the NGOs are doing with their HRM, the study collected data on and measured the presence and activeness of a board, number of times the board met the previous year, the number of employees, academic qualification of the employees, total number of employees trained in the previous year, total emoluments in relation to number of employees and employee turnover. The scoring for the variables is specified as follows:

Presence of a board in 2014/2015 = 1, otherwise = 0

Number of times the board met in the year 2014/2015 as a measure of activeness = 0 to 2 (max), 0 if no meeting, 1 for 1 meeting and 2 for two or more meetings

Number of permanent employee employed in 2016: 1 – 5 = 1, 6 – 10 = 2, > 10 = 3

Academic and professional qualification of management and employees: 1 – 30% SHS or higher = 1, 31 – 60% SHS or higher = 2, >60% SHS or higher = 3

Total number of employees trained in 2016: 1- 30% = 1, 31 – 60% = 2, >60% = 3

Emoluments: 0 -30% below minimum wage = 3, 31 -60% below minimum wage = 2, >60% below minimum wage =1

Employee turnover in 2016: 0 – 30% left = 3, 31 – 60% left = 2, >60% left = 1

Office, equipment and logistics are expected to facilitate the work of the NGOs. The availability and functioning of these facilities are therefore expected to enhance the capability of the NGOs to deliver services to their beneficiaries. This is measured by the number of office space/room available, presence of mailing address, telephone, fax, e-mail address, tables and chairs, computers, file cabinets,

air conditioners, fans, cars, motor bikes, and bicycles. The scoring for the variables is specified as follows:

Office space available: 1 – 2 = 1, 3 – 4 = 2, >4 = 3

Mailing address available = 1, otherwise = 0

Telephone(s) available = 1, otherwise = 0

Fax machine available = 1, otherwise = 0

E-mail address available = 1, otherwise = 0

Tables and chairs available: 1 – 3 = 1, 4 – 7 = 2, >7 = 3

Computers available: 1 – 2 = 1, 3 – 4 = 2, >4 = 3

File cabinet(s) available = 1, otherwise = 0

Fan(s) or air conditioner(s) available = 1, otherwise = 0

Vehicle(s) available = 2, otherwise = 0

Motorbikes available = 1, otherwise = 0

Bicycles available = 1, otherwise = 0

Every organization requires **financial resources** to carry out both their administrative and operational duties and the success of an NGO to a large extent depends on the level of financial resources available to the organization and how prudent they are put to use. Ideally, data should be collected on the actual financial resources available to the NGOs, the sources of funding, the development activities they are put into and the ratio of administrative to operational costs. However, interaction with the industry players shows that most NGOs find it difficult to disclose publicly their actual financial resources for many reasons. Therefore this study though asked about the amount of funds

received but focuses on collecting data on the percentage of the actual amount they are able to raise relative to funding they required for their development activities. This is premised on the fact that NGOs write proposal for funding based on the needs assessment of their current and potential beneficiaries and their own potential to implement the proposed interventions. The success of the interventions therefore largely depends on securing full funding for the development interventions. The higher the percentage of actual funding received relative to total funding required is expected to affect positively the operations of the NGOs. Also, NGOs when seeking sponsorship usually built-in administrative costs of running their offices into projects costs since donors do not usually finance administrative costs of these NGOs. However, the lower the administrative costs relative to the total costs of a project, the better it affects their core development activities. The scoring for the variables is as follows:

Percentage of funding requirement for the 2016 secured:

= X% * 10

Administrative cost as a percentage of total budget for the year:

1 – 30% = 3, 31 – 60% = 2, >60 = 1

Development Activities of the NGOs

NGOs must carry out their development activities in such a way as to contribute to poverty reduction and economic development among their beneficiaries or clientele in their areas of operations. The study examines the development activities of NGOs in the Shea industry in terms of their relevance, effectiveness, efficiency, impact and sustainability mostly from the perspective of

the beneficiary of the NGOs' activities. Development is about the people and what matters to them or what is of concern to them at a point in time (Blanchard, 1988). Projects have been implemented in communities and abandoned by the people because they do not feel ownership of the projects as they were not actively involved in needs assessment, implementation and evaluation of the projects. Therefore, to measure the **relevance** of the development activities of an NGO, data is collected on the degree of participation of the beneficiaries at conception, implementation and evaluation stages of the project. The study adopts a typology of community participation in development project developed by Leeuwis and Van den Ban (2004) in which the beneficiaries are asked to rank their degree of participation at the conception, implementation and evaluation stages from merely receiving information on the development projects to self-mobilization of development projects. The following five degrees of participation were identified and adopted by the present study:

- Receiving information in which beneficiaries of development projects are informed of the benefits the projects will bring to them but are not involved in any decision making.
- Giving information passively: here the beneficiaries are asked questions and are allowed to make suggestions to enable the project implementing body make decisions relevant to the project.
- Consultation entails the beneficiaries asking relevant questions and fully expressing their views without restrictions but the final decision making still rest with the interventionists.

- Collaboration involves both the interventionists and the project beneficiaries jointly identifying the relevant projects and jointly deciding on what to do at every stage of the projects.
- Self-mobilization is the highest form of development participation in which the beneficiaries independently identify the project relevant to their needs and implement same with the project staff providing necessary supports for the project. The scoring for the variables is as followed:

Relevance of the project or intervention

Receiving information = 1, Giving information = 2, Consultation = 3, Collaboration = 4, and Self-mobilization = 5

To measure the **effectiveness** of the development interventions by the NGO, beneficiaries are asked to state the objective which the project sought to achieve and to indicate whether the stated objective was achieved at the end of the project or not. For example, a project which seeks to train 200 women on new technology for extracting oil from Shea nuts would be considered effective if the 200 women are trained in the new technology and have the ability to use it regardless of whether they adopt its use or not. If less than the number are trained for any reason or the women are still unable to use the technology after the training, the project will be considered ineffective to that extent. Effectiveness was measured by attendance, interest and adoption of the innovations or products introduced. The scoring of the variable is as follows:

Hardly effective = 1, a little effective = 2, averagely effective = 3, above average effective = 4, and very effective = 5

For development interventions that are deemed successful or effective by the beneficiaries, the question of **efficiency** of such project relates the benefit to the cost of implementing the project. The best option to assess the efficiency of projects will be to do a cost-benefit analysis of such project and compare the result with similar projects under similar conditions. However, this is beyond the scope of the present study. Therefore, we ask the implementing NGOs to rank the cost of implementing the project in their own estimation from very high to very low on a 5-point likert scale. The lower the perceived cost of implementing the project, the more efficient the project is described. The scoring of the variable is as follows:

Very low cost = 5, low cost = 4, averagely costly = 3, highly costly = 2 and very highly costly = 1

Also to measure the **impact** of the projects, it will be ideal to have baseline indicators of welfare or poverty profile of the beneficiaries before the implementation of the project and compare the results to similar indicators after netting out the effects of any other intervening factors. However, because we do not have such baseline indicators, we ask the beneficiaries to rank their perceived impact of the project on their income, job creation and welfare from no impact to very high impact on a 5-point likert scale. The higher the score, the more positive the beneficiaries perceived the impact of the project. The scoring for the variable is as follows:

Very low impact = 1, little impact =2, average impact =3, high impact = 4 and very high impact = 5

Finally, the assessment of the **sustainability** of any project seeks to establish among other things the extent to which the project can continue to yield benefits after the withdrawal of support by the funding agency. It may also seek to establish how the project can yield benefit to the present generation without compromising the opportunity for future generations to derive benefits from same resources. The Shea trees grow naturally in the study area and can be depleted if conscious efforts are not made to protect the existing trees and also to plant new ones. To measure sustainability therefore, the study asks whether the project or intervention had operational, financial and environmental sustainability component from the viewpoints of the beneficiary Shea butter processors. The scoring for the variable is as follows:

Intervention has sustainable component(s):

Very low sustainability = 1, low sustainability =2, averagely sustainable =3, highly sustainable = 4 and very highly sustainable = 5

Relationships and Partnerships with Relevant Stakeholders

NGOs like many other organizations operate only a fraction of their value chain and rely critically on other stakeholders in order to achieve their objectives of bringing development to the people (Burt, 1992). Among the main stakeholders of NGOs in bringing development to the people are the government agencies, donor communities, financial institutions; input suppliers, output markets, media organizations and other NGOs among others. This study postulates that having good relationships and partnerships with these organizations and agencies will

improve the capability of the NGOs to bring out development in their operational areas.

NGOs in Ghana are regulated by law and are required to register with appropriate government agencies including the District/Municipal/Metropolitan Assemblies, the Department of social welfare, and the Registrar General's Department. All these give legal backing as well as legitimacy to the NGO. To measure the NGOs relationship with government agencies, the study collects data on whether the NGO is registered with the District/Municipal/Metropolitan Assemblies, the Department of social welfare, and the Registrar General's Department. Also, data was collected on whether the NGO had renewed its licenses and registration in the previous years and current year of operation. Data was also collected on whether the NGO submitted its annual report to the social welfare department and also audited account to the appropriate agencies. The scoring for the variable is as follows:

Registered with the District Assembly = 2, otherwise = 0

Registered with the Registrar General's Department = 2, otherwise = 0

Renew registration in 2016 = 2, otherwise = 0

Audited by external auditor = 2, otherwise = 0

Most NGOs seek funding for their development interventions from outside the organization either locally or internationally. The donor communities are therefore important partners in NGO activities. The study collected data on how many proposals for funding the NGO wrote in the previous year and how many yielded positive results. The higher the number of proposals and positive results

the more capable the NGO is expected to be. The scoring for the variable is as follows:

Number of donor funding received in 2014/2015 = 0 – 5 (max.) depending on the number of funding with 5 or more funding receiving the maximum 5 points.

To ensure transparency and accountability, NGOs are expected to open and operate bank accounts with financial institutions in their areas of operation. Data was therefore collected on whether the NGO operated bank account actively the previous year. The scoring for the variable is as follows:

Operate bank account(s) = 2, otherwise = 0

NGOs rely on inputs from suppliers and also have to sell their outputs/produce to customers or companies who require them. They may need these input suppliers and output markets for themselves or for the beneficiaries of the interventions. Therefore, having strategic input suppliers may guarantee regular supplies of the inputs to the NGO at favourable prices and in timely manner. The scoring for the variable is as follows:

Has partnership with input supplier(s) = 2, otherwise = 0

Also, a ready output markets for the NGO's produce and outputs also ensure timely recovery of production costs and guaranteed markets and prices. This study therefore collects data on partnership the NGO had with output market in the previous year. The scoring of the variable is as follows:

Has partnership with output market or customer(s) = 2, otherwise = 0

Media organizations also play significant roles in promoting NGOs' activities and they can leverage their media exposure to advertise their presence,

products and services to existing and potential beneficiaries and clientele. It is therefore important for NGO to forge very positive relationships with media organizations in their operational areas. The study collected data on the type of and number of media engagement the NGOs had with the media in their areas of operation in the previous year. The scoring is as follows:

Has partnership with media organization in 2016 = 2, otherwise = 0

There are many NGOs operating in the Northern Region with some seeking to perform the same services to the same people leading to duplication of efforts. It is therefore important for NGOs to build strategic partnerships with other NGOs in their operation areas and elsewhere in order to generate appropriate synergies for the development of the areas. NGOs also need to learn best practices from more successful NGOs to enhance their own operations. The study collected data on the type of and number of partnership the NGOs had with other NGOs in the previous year. The scoring for the variable is as follows:

Has partnership with other NGOs = 2, otherwise = 0

Also being a member of local and international industry associations enhances the credibility of the NGOs. The scoring for the variable is as follow:

Belong to no association = 0, only local or only international =1, both local and international = 2

Summing up the scores yielded a total of 50 points for the internal management of the NGOs, 25 points for the development activities of the NGOs and 25 points for relationships and partnerships of the NGOs with other stakeholders in development.

Internal management of NGOs = 50

Development activities of NGOs = 25

Relationships and partnerships of NGOs with other stakeholders in development = 25

Total (capability index of NGOs) = 100.

The higher the score, the more capable the NGOs are described.

For the objective 1 which seeks to construct a capability index for the NGOs, Table 2 below gives a list of variables, their a priori expectation and literature evidence supporting their inclusion in the study.

Table 2 - *Variables of NGOs Capability Index*

Objective 1 Variable	A priori expectation	Literature evidence
Presence of Board	positive	Bontis et al (2000); Holzer and Callahan (1998); Rainey and Steinbauer (1999)
Number of board meetings	positive	Boyne (2003); Inmyxai and Takahasi (2010); Rainey and Steinbauer (1999)
Number of permanent staff	Positive	Arthur (1994); Danlami (2012); Oladipo and Danlami (2011)
Educational qualification	positive	Caliskan (2010); Huselid (1995); Huselid and Becker (1996); Kim and Ployart (2014)
Number of employee trained	Positive	Boyne (2003); Danlami (2012); Oladipo and Danlami (2011); Kim and Ployart (2014);
Salary/wages	Positive	Caliskan (2010); Pitts (2005); Waiganjo (2012)
Employee turnover	Negative	Brown et al (2008); Pitts (2005)
Office space available	Positive	-
Mailing address available	Positive	-
Telephone available	Positive	Kim and Ployart (2014); Perry and Miller (1991)
e-mail address available	Positive	-
Number of tables and chairs	Positive	-
Number of Computers	Positive	Lee and Perry (2002)
File cabinet available	Positive	-

Table 2 Continued

Number of vehicles	Positive	-
Number of motorbikes	Positive	-
Number of bicycles	Positive	-
Percentage of funding secured	Positive	Beck et al (2008); Berger and Udell (1998); Cavusgil (1984); Riding et al (2012); Tannous (1997)
Administrative costs	Negative	
Relevance of development activities	Positive	Leeuwis and Van den Ban (2004); Okorley (2007)
Effectiveness	Positive	
Efficiency	Negative	
Impact	Positive	
Sustainability	Positive	
Registered with DA	Positive	
Registered with RG's Dept.	Positive	
Renewed registration the previous year	Positive	
Audited by external auditor the previous year	Positive	
Number of donor funding the previous year	Positive	
Operate bank account	Positive	
Partnership with input suppliers	Positive	
Partnership with output markets	Positive	
Partnership with media organization	Positive	
Partnership with other NGOs	Positive	

Source: Author's Construct based on Literature

Estimating the Technical Efficiency of the Women

Objective 2: To estimate the technical efficiency of the women small scale Shea butter processors in the Northern Region.

The term technical efficiency can be described as the effectiveness with which a given set of inputs is used to produce an output. A firm is said to be technically efficient if it is producing the maximum output from the minimum quantity of inputs such as labour and capital. Labour efficiency measures the

difference between observed and optimal values of output obtainable from inputs used by a worker (Domfe, 2013). The concept of technical efficiency entails a comparison between observed and optimal values of output and inputs of a production unit (Sadoulet and Janvry, 1995). This comparison takes the form of the ratio of observed to maximum potential output obtainable from the given input, or the ratio of the minimum potential to observed input required to produce the given output, or a combination of the two.

Traditional approaches of measuring productivity assume that a firm or farm is technically efficient and that production is taking place at the frontier of production. Such approaches ignore efficiency as a determinant of productivity and seek to attribute output growth to input growth (Henningsen, 2008). Under such assumption of technical efficiency, both parametric and non-parametric methods can be employed to compute the productivity index. However, the non-parametric methods such as the Divisia index and the Tornqvist index though easy to compute because there are no parameters to be estimated, are widely criticized in that they do not account for measurement or sampling errors (Odhiambo and Nyangito, 2003). Another non-parametric approach for measuring productive efficiency is Data Envelopment Analysis (DEA). This approach is a mathematical programming commonly employed to evaluate the productive efficiency of a number of producers relative to the "best" producer. The fundamental assumption here is that if a given producer A is capable of producing output Q(A) with inputs X(A), then the other producers should be able to do the same if they were to be operating efficiently (Kuosmanen and Johnson, 2010). This approach has the

advantage of being able to handle multiple inputs and outputs models and does not require functional forms relating inputs to outputs. It can also handle inputs and outputs measured in different units. It is however sensitive to noise and difficult to use to test hypothesis due to its non-parametric nature (Odhiambo and Nyangito, 2003). The number of efficient firms on the frontier also tends to increase with the number of input and output variables. It also attributes all deviations from the frontier to inefficiency without accounting for stochastic noise or measurement errors in the data. More so, it is not suitable for large data set (Berg, 2010).

The parametric approach is often the alternative to the non-parametric index approach. The approach involves parameterizing the production function and estimating its parameters. The estimated parameters from the model can then be used to solve for technical change in the model. In the absence of technical inefficiency, the technical change will be the TFP and will be reflected in the vertical shifts in the production function. Mathematically, TFP can be computed as the difference between output and weighted average of the inputs. The weights are estimated econometrically from the production coefficients in the agricultural production functions.

Stochastic frontier approach is an example of parametric programming approach able to estimate economic relationship that is either modeled as minima or maxima instead of averages. It is preferable to the traditional OLS regression for its ability to employ maximum likelihood estimation (MLE) technique. MLE technique is compatible with frontier functions as OLS is good for average

functions. OLS usually either under or over predict the outcome of non-average functions.

There are two common examples of frontier models; production frontier model and cost frontier model. While production frontier models usually estimate maximum possible output per given inputs; cost frontier models estimate the minimum cost of producing optimal quantities of output in a given production process. Stochastic production frontier models apart from incorporating the efficiency term into the analysis as do the deterministic approaches; also capture the effects of exogenous shocks beyond the control of the analyzed unit (Murillo-Zamorano, 2004). Again, the models also assume that producers produce less than optimum possible because of inefficiency. As a result, the framework of stochastic frontier production model was developed to explicitly allow for failure of producers to optimize their production.

For example, if a producer has a production function of ($Xi\beta i$) in the world without error or inefficiency, the ith producer would produce:

$qi = f(Xi\beta i)$ ..... (i)

where Xi is a vector of inputs, qi is output and β is a {K x 1} vector of parameters to be estimated. Assuming $f(Xi\beta) = \beta o Xi^{\beta i} X_2^{\beta 2} ..... X_k^{\beta k}$

Taking natural log of both sides yields:

$\ln f(Xi\beta) = \ln\beta o + \beta i \ln Xi + \beta 2 \ln X2 .... \beta k \ln Xk$ ..... (ii)

Now supposing qo is the observed output and qf, the optimal output, then usually $qo < qf$ because of inefficiency and other factors. Hence the need to add a non-

negative random variable to f(Xiβ) to capture the technical inefficiency of producer i:

Hence the production function (i) becomes

qi = f(Xiβi)ξi ..... (iii)

where ξi is the level of efficiency for the producer I, ξi must be in the interval (0, 1). In that case if ξi = 1, it implies the producer is getting optimal output per given technology embodied in the production function, that is, highest possible output per the given input. However, if ξi < 1, the producer is not making optimal use of the inputs Xi, given the technology embodied in the production function f(Xiβ).

From (ii) equation (iii) becomes:

lnf(Xiβ) = lnβo + βilnXi + β2lnX2 .... βklnXk + lnξi ..... (iv)

Considering that the production function is linear in logs, defining μi = -ln(ξi) yields:

lnf(Xiβ) = lnβo + βilnXi + β2lnX2 .... βklnXk - μi ..... (v)

Fixed effects could be used to estimate equation (v) with μi being treated as the firm fixed effect. Since output is assumed to be strictly positive, the degree of technical efficiency is also assumed to be strictly positive, that is ξ > 0.

Aigner and Chi (1968) suggested a measure of technical efficiency as:

Observed output/optimum output = qi/exp(Xiβ) = exp(Xiβ – μi)/exp(Xiβ) ..... (vi)

While μi is supposed to measure inefficiency, it might also be capturing other random shocks that are beyond the control of the producer.

Aigner, Lovell and Schmidt (1977) thus suggested adding a two-sided error term to one-sided error term of Aigner and Chi (1968). Therefore, assuming output to be subjected to random shocks, we estimated the stochastic frontier production for the small scale Shea butter processors in the Northern Region as follows:

$\ln(qi) = \beta o + \beta i \ln Xi + \beta ii \ln Xii + \beta iii \ln Xiii + \beta iv \ln Xiv + \beta v \ln Xv + \beta vi \ln Xvi + \beta vii \ln Xvii - vi + \mu i$ ..... (vii) where:

ln = logarithm to base 'e'

qi = Shea butter output measured in kg

Xi = quantity of Shea nuts processed measured in kg

Xii = quantity of firewood measured in kg

Xiii = quantity of water measured in litres

Xiv = labour measured in man-hour

Xv = cost of crushing the Shea nut measured in cedis

Xvi = cost of milling the roasted grits measured in cedis

Xvii = cost of packaging the Shea butter measured in cedis

Vij = random variation in output due to factors outside the worker's control. This is assumed to be independently and identically distributed as $N \sim (0, \sigma^2 v)$

Uij = technical efficiency of the ith worker. This is represented as:

$Uij = \alpha_0 + \alpha izi + \alpha iiZii + \alpha iiiZiii + \alpha ivZiv + \alpha vZv + \alpha viZvi + \alpha viiZvii + \alpha viiiZviii + \alpha ixZix + \alpha xZx$

Zi = age of the woman Shea butter processor measured in years

Zii = experience in Shea butter processing measured in years

Ziii = marital status, a dummy variable with married as 1 and otherwise 0

Ziv = location of the household, a dummy with Tamale as 1 and otherwise 0

Zv = education, a continuous variable measured as number of years in school

Zvi = household size, a continuous variable measured as number of people in the household

Zvii = received training = 1 and otherwise 0

Zviii = volume of credit received measured in cedis

Zix = capability index of the NGOs

Zx = remittances received measured in cedis

Both β coefficients and α coefficient are unknown parameters estimated simultaneously.

Following Villan and Fleming (2006), test of hypothesis for the parameters in the frontier production function and in the inefficiency models are performed using the generalized likelihood-ratio test statistic defined by:

$$\lambda = -2\{\log[(Ho) - \log[(Hi)]\}$$

Where L(Ho) and L(Hi) denote the values of the likelihood function under the null hypothesis (Ho) and alternative hypothesis (Hi) respectively. If the null hypothesis is true, the test statistic has approximately a chi-square or a mixed chi-square distribution with degree of freedom equal to the difference between the parameters involved in the null and alternative hypotheses. If the inefficiency effects are absent from the model as specified by the null hypothesis;

$$Ho: \gamma = \delta_o = \delta_1 = \delta_2 = \ldots. \delta_{10} = 0$$

Then λ is approximately distributed according to a mixed chi-square with 9 degrees of freedom. The critical values for the generalized likelihood-ratio test are obtained from the standard chi-square table.

For objective 2 which seeks to examine the determinants of technical efficiency of their beneficiary small scale Shea butter processors, the following Table 3 gives a list of variables used for the analysis, their a priori expectation, unit of measurement and literature evidence supporting their inclusion in the model.

Table 3 -*Variables for measuring technical efficiency of the Women Shea butter processors*

Objective 2 Variables	A priori expectation	Unit of measurement	Literature evidence
Labour productivity factor			
Number of employed	Positive	Man-hour	Sackey and Osei (2006)
	Negative	Man-hour	Sackey and Osei (2006)
Total expenditure on material input	Negative	GHC	Esinam (2010); Rosenberg, (1983)
Inefficiency effect			
Age	Positive/negative	Years	Positive: Danso-Abbeam et al, 2012; Kyei et al, 2011; Olarinde et al, 2008; Onumah et al 2010; negative: Ajibefun and Daramola, 2003; Coelli and Battese, 1996; Kyei et al, 2011; Mazumder and Gupta, 2013;
Location	Negative	Tamale = 1, otherwise = 0	
Marital status	Negative/positive	Married = 1, otherwise = 0	Positive: Ekumwe et al, 2008; Olarinde et al, 2008; negative: Amaza et al, 2010; Danso-Abbeam et al, 2012; Obwona, 2000; Okezie, 2006
Education qualification	Negative	Years	Rahman et al, 2012; Ogundari, 2013; and

Table 3 Continued

			Onumah et al, 2010
Household size	Negative/positive	Persons	
Number of years in operation (experience)	Negative	Years	Adesina and Djato (1996); Danso-Abbeam, 2012; Kyei et al, 2011; Ogundari, 2013; Onumah et al, 2010
NGO Capability (defined in table 2 above)	Negative	Capability score	See table 2 above

Source: Author's Construct based on Literature

Variables for Technical Efficiency, Testable Hypothesis and a Priori

The use of the main inputs in Shea butter processing are expected to increase output of Shea butter processed and therefore it is hypothesized that the more of the inputs utilized, the more output of Shea butter processed will be all things being equal. All the main inputs therefore have positive a priori expectation with Shea butter output.

For the technical inefficiency variables, age of the women may have positive or negative effects on their technical inefficiency as some studies such as Danso-Abbeam (2012), Kyei et al (2011) and Onumah et al (2010) have found younger workers to be more technically efficient while other studies such as Ajibefun and Daramola (2003) and Coelli & Battesse (1996) have found older workers to be more technically efficient. Experience of the women measured by the number of years the women have been in Shea butter processing is expected to have negative effects on technical inefficiency as the more experienced women are expected to be more technically efficient as confirmed by many findings in the table above.

Marital status of the women may have positive or negative effects on their technical inefficiency as some studies such as Ekumwe et al, 2008; Olarinde et al, 2008 have found married women to be more technically inefficient than unmarried persons because marriage and its attendant responsibilities rather affect the ability of workforce from producing efficiently. Other studies such as Amaza et al, 2010; Danso-Abbeam et al, 2012; Obwona, 2000; and Okezie, 2006 have found married people to be more technically efficient than unmarried ones because of the support they receive from their partners. Location of the household is expected to have negative relationship with technical inefficiency of the small scale Shea butter processors as household located in the urban centres have better access to inputs and output markets and are therefore expected to be more technically efficient.

Level of highest educational qualification measured as number of years in school is expected to have negative relationship with the technical inefficiency of the women since the more educated they are, the better it will be for them to adopt new methods and technologies that will improve their efficiency. Many studies such as Rahman et al, 2012; Ogundari, 2013; and Onumah et al, 2010 have found that education helps reduce inefficiency and helps to improve efficiency. The number of training received is expected to have negative relationship with technical inefficiency of the women as training in modern methods and techniques will help to improve technical efficiency. The amount of credit received is also expected to have negative relationship with technical inefficiency of the small scale Shea butter processors as the credit can be used to procure

inputs and modern methods and techniques. Household size may have negative or positive relationship with technical inefficiency of the women depending on whether members contribute family labour or funds to the enterprise or only consume from it.

Finally, the capability score of the NGOs is expected to have negative relationship with the technical inefficiency of the small scale Shea butter processors since the higher the capability score of the NGOs, the less technically inefficient the women are expected to be. The capability scores of the NGOs that provided services to each small scale Shea butter processors were matched with their respective beneficiary women small scale Shea butter processors. There were few women who received services from more than one NGO and the capability index of the NGOs were combined for such women.

Measuring the Poverty Profiles of the Women

Objective 3: To analyze empirical linkages between poverty outcomes of the small scale Shea butter processors in the Northern Region and their technical efficiency and capability index of NGOs in the Shea industry

Researchers on poverty often face the difficult choice between income measure and consumption expenditure measures in order to analyze household welfare or poverty level. Whereas the income receipt by household represents potential for consumption, in a very informal economy like Ghana where subsistence activities dominate, income may by far underestimate household welfare and consumption level. Therefore collecting data on actual household consumption may give a better estimate of household welfare or poverty level.

Data on household income and consumption is collected from the women small scale Shea butter processors. The Ghana Statistical Service conducts Ghana Living Standard Survey (GLSS) and uses it to determine the number of households in Ghana which fall below the poverty line.

Usually, there are two levels in computing the poverty line. First, one has to choose the relevant dimensions and indicators of well-being. The basket of goods and services that constitutes the minimum daily requirement of a household is determined and calculated in monetary term. Expenditure on clothing and shelter that meet minimum requirement is also added in order to determine the absolute poverty line. Second, one has to select a poverty line, that is, a threshold below which a given household or individual will be classified as poor.

Following the GLSS 6 methodology, the consumption expenditure for a minimum food basket providing 2,900 calories per adult equivalent per day is calculated. This represents extreme poverty line, which means that a household's total consumption expenditure below is not even adequate to meet the minimum calorie requirement. An additional expenditure on non-food items such as clothing, housing and mobile phone expenditure was added to the extreme poverty line to produce the absolute poverty line. According to GLSS6, two nutritionally-based poverty lines are derived from this procedure:

> *A lower poverty line of 792.05 Ghana cedis per adult per year: this focuses on what is needed to meet the nutritional requirements of household members. Individuals whose total expenditure falls below this line are considered to be in extreme poverty, since even if they allocated their entire budget to food, they would not be able to meet their minimum nutrition requirements*

> *An upper poverty line of 1314.00 Ghana cedis per adult per year: this incorporates both essential food and non-food consumption. Individuals consuming above this level can be considered able to purchase enough food to meet their nutritional requirements and their basic non-food needs.*

The extent of absolute poor is defined as the number of people who are unable to command sufficient resources to satisfy these basic needs. It is measured by the number or head count of those whose income or consumption falls below the absolute poverty line. Per capita consumption is also determined by considering the number of people in the household and using it to divide the value of household consumption assuming household members have similar needs. In reality however, different members of the household may have different needs especially with respect to age. Therefore, consumption per adult equivalent that captures differences in needs especially by age and gender derived with the use of economies of scale in consumption have become common in poverty analysis (World Bank Institute, 2005). The essence is to apply weight to household as to reflect the number of adults the household is considered to be worth. For example, a household with two adults and six children would have smaller adult equivalent than another with five adults and three children even though both have eight absolute members. There are different equivalent scales with OECD equivalent scale one of the most common and straight forward to use (Atkinson, Rainwater and Smeeding, 1995; and Burniaux, et al 1998).

To analyze the poverty profile of the Shea industry actors, the consumption expenditure variable is matched with the socio-economic characteristics of the small scale Shea butter processors such as age, experience in

Shea butter processing, educational qualifications, household size; access to credit, number of training received, capability scores of NGOs and community characteristics as either urban or rural, in order to establish how these variables correlate with consumption expenditure variable.

When there is evidence that two variables are correlated, it may be of interest to describe the relationship between them using regression analysis. Regression analysis seeks to find the models that best describe the relationship that exists between two or more variables. Regression models may be linear or non-linear, simple or multiple. In each case, the major purpose is to explore the influence or effect of one or more variables on the other(s). Multiple linear regression generalizes the single linear regression model by allowing for many variables in a mean function rather than just one intercept and one slope.

Starting with dependent variable consumption expenditure (Y) and the simple linear regression mean function:

$E(Y/Xi = X_1) = \beta_0 + \beta_1 X_1 \ldots\ldots\ldots\ldots\ldots\ldots$ (ix)

The general multiple linear regression model with the dependent variable Y and independent variables $X_1 \ldots . X_P$ is of the form:

$E(Y/Xi = X_1, X_2 \ldots X_P) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots \beta_P X_P \ldots\ldots\ldots\ldots\ldots\ldots$ (x)

Where Y denotes consumption expenditure as dependent variable and $X_1 \ldots . X_P$ denote a set of explanatory variables. α_1 to α_P are unknown parameters to be estimated.

The estimated household consumption expenditure model (OLS model) was therefore specified as follows:

$$Y = \alpha o + \alpha iZi + \alpha iiZii + \alpha iiiZiii + \alpha ivZiv + \alpha vZv + \alpha viZvi + \alpha viiZvii + \alpha viiiZviii + \alpha ixZix + + \alpha xZxi + \alpha xZxi + Uij + \varepsilon \ldots\ldots\ldots (xi)$$

Where:

Y = total household consumption expenditure measured in cedis

Zi = age of the woman Shea butter processor measured in years

Zii = experience in Shea butter processing measured in years

Ziii = marital status, a dummy variable with married as 1 and otherwise 0

Ziv = location of the household, a dummy with Tamale as 1 and otherwise 0

Zv = education, a continuous variable measured as number of years in school

Zvi = household size, a continuous variable measured as number of people in the household

Zvii = received training = 1 and otherwise 0

Zviii = volume of credit received measured in cedis

Zix = capability index of the NGOs

Zx = remittances received measured in cedis

Zxi = efficiency score of the Shea butter processors

β coefficients are unknown parameters estimated and ε is the error term

For the third objective of this study which seeks to estimate the poverty outcome (consumption expenditure) of the small scale Shea butter processors and ascertain empirical linkages with their technical efficiency and capability scores of the NGOs, the following Table 4 gives a list of variables used for the analysis, their a priori expectation, unit of measurement and literature evidence supporting their inclusion in the model.

Table 4 -*Explanatory Variables for the Welfare or Poverty Function (Dependent Variable: Total Value of Household Consumption GHC)*

Variable	A priori expectation	Unit of measurement	Literature evidence
Age	Positive	Years	Thomas and Mcdowell, 1994
Location	Positive (urban)	Tamale = 1, Otherwise = 0	Thomas and Mcdowell, 1994; Levitan and Shapiro, 1987; Morrisey, 1991; Datt et al, 2000; Jose and Collado, 2004; GSS, 2008
Marital status	Positive	Married = 1, otherwise = 0	Morrisey, 1991, Thomas and Mcdowell, 1994
Education	Positive	Years	Thomas and Mcdowell, 1994; Brucks, 2001
experience	Positive	Years	Danso-Abbeam, 2012; Kyei et al, 2011; Ogundari and Akinbogun, 2010; Ogundari, 2013; Onumah et al, 2010
Household size	negative	Persons	Jose and Collado, 2004; Thomas and Mcdowell, 1994; Ogundari and Akinbogun, 2010
Credit	positive	GHCedis	Fissuh and Harris (2005), Ravallion (1996), Ravallion and Datt (2002)
Number of Training	positive	Counting number	Thomson and Mcdowell (1994)
NGOs Capability	Positive		
Remittances received	positive	GHCedis	Fissuh and Harris (2005)

Source: author's construct based on literature

Variables for Poverty Analysis, Testable Hypothesis and Apriori Expectation

The dependent variable for poverty analysis is the household consumption expenditure and it is modeled on a number of explanatory variables. The age of the respondent women Shea butter processors is expected to have a positive

relationship with the household consumption expenditure in the sense that older women are expected to have worked longer and accumulate wealth over time and have higher consumption expenditure. Thomas and Mcdowell (1994) after modeling determinants of poverty among workers in the metro and non-metro areas of the Southern part of the United States found a negative correlation between age of a worker and poverty. In other words, as a result of inexperience, young workers tend to be poorer in the US.

Location of the households is also expected to have effects on the households' consumption expenditure with the households in the urban areas expected to have higher consumption expenditures than those in the rural areas. This is because households in the urban areas have better access to life-enhancing social amenities as well as input and output markets. They can therefore leverage on these opportunities to earn better than rural households and have higher consumption expenditure. Many studies including Thomas and Mcdowell, (1994); Levitan and Shapiro, (1987); Morrisey, (1991); Datt et al, (2000); Jose and Collado, (2004) and GSS, (2008) have all found lower poverty levels in urban areas of their studies compared to the rural areas.

Evidence from literature also suggests that larger family size is a major contribution to higher poverty especially if the proportion of dependent member such as children, elderly and the sick are higher. This is based on the assumption that most of the household members are not working but are dependent on the few working adults who have to share the fruits of their labour with all family members (Thomas and Mcdowell, 1994). However, large family size can also

contribute to lower poverty especially if many members earn income or contribute family labour to family own enterprise. Therefore, household size may have positive or negative relationship with household consumption expenditure. Educational qualification also has effect on poverty and higher educational attainment is expected to reduce disposition to poverty. Morrisey (1991); Thomas and Mcdowell, (1994) and Brucks (2001) have all found that poorly educated workers are relatively poorer. This is because highly educated workers have better paid jobs and are more likely to earn enough to escape poverty even if the rest of the household members are not working.

Experience of the women measured by the number of years in Shea butter processing is expected to have a positive relationship with consumption expenditure meaning that the more experienced the women, the lower level of poverty among them. This is because more experienced women are expected to be more technically efficient in their production and might have also accumulated wealth over the years. Similarly, amount of credit obtained by the women is expected to have positive relationship with the consumption expenditure of the women as they can use the credit to expand their business and earn more income for consumption. Fissuh and Harris (2005), Ravallion (1996), Ravallion and Datt (2002) have found positive relationship between access to credit and household consumption expenditure.

Similar to the level of educational attainment, number of training workshops attended by the women is expected to have positive relationship with the household consumption expenditure. On the job training will expose the

women to new methods and techniques of Shea butter processing and help them to improve their efficiency and earn higher income. Households that receive remittances are also expected to have lower levels of poverty since the additional income can be used to improve their production or for consumption. Fissuh and Harris (2005) in a study of the determinants of poverty in Eritrea found lower levels of poverty among households that receive remittances. Finally, the capability index of the NGOs is expected to have a positive relationship with the household consumption expenditure of the small scale Shea butter processor. This is because the NGOs help the women to improve efficiency and reduce poverty through training, input supply and market facilitation. Therefore, the more capable the NGOs, the better they are able to reduce poverty among the women.

Apart from income and consumption expenditure measures of poverty and household welfare, other studies have also measured other dimensions of poverty such as the household asset index (Booysen et al, 2008; Sierminska, Brandolini and Smeeding, 2008), access to services (Coulombe and Wodon, 2008) and human development (Seth and Villar, 2017).

Data Collection Procedures

The primary data for this study was collected between January and April, 2017. However, a lot of underground works were done before the actual data collection including extensive literature review, field study of the Shea butter processing and pretesting of the questionnaires. Following successful pretest of the questionnaire and interview guide and necessary adjustments and corrections, the hard copies of the questionnaires were dispatched to the NGOs between 9th

and 13th January while the soft copies were also sent to their e-mail addresses. At the same time, four volunteers from the SNG were trained on the objectives of the study and how to administer the women interview guide. Fortunately, these volunteers had been working with the women groups and this facilitated locating the women and administering the household interview guide to them. Data was collected from 12th to 21st January, 2017. The research assistants and I moved to the selected communities together covering each district in a day. Most of the women were found together at their processing centres and this reduced the length of time in locating respondents. However, it also presented the challenge of influence as the women would discuss some of the questions with their colleagues before giving their answers. Also, some of the women that were not selected for the interview felt disappointed because they thought those selected would have some privileges over them because the interview was conducted just when a new government had just been inaugurated but we tried to allay such fears.

With respect to the NGOs, 26 out of the 30 questionnaires sent out were received by the end of April, 2017 representing about 84% recovery rate. Most of the NGOs did not also complete the questionnaires completely and follow-up phone calls were used to clarify some of the issues.

Data Processing and Analysis

Right on the field, the completed questionnaires and interview guide were vetted to identify and correct any errors in them. A code book was created and each question coded appropriately for easy recognition and analysis. Data was then entered into SPSS which was used to do most of the analysis. For each

question, the frequency and distribution was also examined to detect and correct any wrongful entry especially when outliers were found. For the first objective to construct a capability index for the NGOs in the Shea industry, the unit of analysis was the NGOs. Each variable was given a score and depending on the response of the NGOs to the question, an appropriate score was entered for the NGOs for that variable. For example, NGOs with 1 to 5 permanent employees got a score of 1, 6 to 10 permanent employees got a score of 2 and greater than 10 permanent employees got the maximum of 3 points allotted to that variable. The scores for all the variables under consideration were then aggregated to determine the capability index of the NGOs.

For the objective 2 to estimate the technical efficiency of the women small scale Shea butter processors, the unit of analysis was the Shea butter processing enterprises. The relevant variables were imported into STATA 14 software to run the analysis for the stochastic frontier model. Also for objective 3, the unit of analysis was the households of the women small scale Shea butter processors. The OLS regression model to analyze the empirical linkages between poverty and technical efficiency of the small scale Shea butter processors and NGOs' capability was also run using STATA14 software.

Chapter Summary

This chapter gave an account of the research methods adopted to achieve the specific objectives of the study. It gives the philosophical and sociological underpinnings of the study and justified the design of the study. It also gives a brief description of the study areas, the target population, and sampling procedure

used. The chapter also gives an account of the analytical framework of the study. It discusses types and sources of data, data collection instruments, data collection procedures and data processing and analysis.

CHAPTER FIVE

CAPABILITY INDEX OF NGOs IN THE SHEA INDUSTRY

Introduction

This study seeks to assess the Shea industry and poverty outcomes in the Northern Region of Ghana. The study employed cross sectional survey design to collect relevant data from the NGOs and small scale Shea butter processors using well structure questionnaires and household interview schedule respectively. It examined the capabilities of the Non-Governmental Organizations that are providing various services to the small scale Shea butter processors in terms of their internal management structure, development activities and relationships and partnerships with other stakeholders of development in the region.

With respect to the NGOs, only 26 out of the 30 questionnaires submitted were returned and this constituted the actual respondents used for the analysis. Many of the NGOs also did not respond to certain parts of the questionnaires especially aspect dealing with the funding amount received from different sources in the previous year.

Institutional Characteristics of the NGOs

It is observed from Table 5 that most of the 26 NGOs in the study are in the second generation of their operations as the average year of establishment of the NGOs is 11.5 and ranges from 3 to 25 years. According to Korten's typology of NGOs development, NGOs in the first generation are usually characterized by provision of relief items and medical supplies to victims of wars or natural disasters whereas the second generation of NGOs focus on helping people to

achieve self-reliance in development projects, supporting local organizations and supplementing service provisions. It can also be observed that some of the NGOs are already approaching the third generation typology which focuses on sustainable systems development by seeking to influence government policies related to the Shea industry. It is again observed from Table 5 that most of the NGOs have activities in the Shea industry as their flagship program since the average ten years of involvement with the small scale Shea butter processors was almost equal the average for the year of establishment of the NGOs.

Table 5-*Years of Operation and with Shea Industry*

Statistic	Minimum	Maximum	Mean	Std. Dev.
Year Established	3	25	11.5	6.57
Year with Shea	1	24	10.5	5.51

No. of observations = 26
Source: Field Survey, Akosile (2017)

It is observed from Table 6 that majority of the 26 NGOs (about 62%) facilitate marketing of Shea butter only in the local market, about 15% in the international market only while about 23% are involved in both the local and international market. Also, it was observed that the NGOs have diversified their activities because over 80% of them are engaged in the facilitation and marketing of other commodities such as cashew, maize, honey, dawadawa, and ground nut among others. It is also observed in Table 6 that about 81% of the NGOs did supply inputs for Shea butter processing. The inputs supplied include Shea nuts,

firewood, water, and packaging materials. They also have one stop centers where these women can go through almost all the processes involved in processing Shea nuts into butter. Almost all the NGOs that supply inputs to the Shea butter processors (77%) also have formal relationships with the input suppliers to facilitate timely delivery of the inputs and at competitive prices.

Table 6-*Institutional Characteristics of NGOs*

Market Orientation	Local (61.5%)	International (15.4%)	Both (23.1%)
Other Commodities	Yes (80.8%)	No (19.2%)	
Input Supply	Yes (80.8%)	No (19.2%)	
Formal Relation with Input Suppliers	Yes (77%)	No (23%)	

No. of observations = 26
Source: Field Survey, Akosile (2017)

The first objective of this study seeks to construct a capability index for NGOs in the Shea industry in the Northern Region in terms of their internal management structure; development activities and; relationships and partnerships with other relevant stakeholders in development. The internal management structure is assessed in terms of human resources, physical resources (office, equipment and logistics) and financial resources.

Human Resources of the NGOs

Human resources are the most important assets of any organization as they would interact with and utilize the other resources in order to achieve the

objectives of the organization. The study therefore collected data on the human resource base of the NGOs including the presence of a Board and frequency of the Board meeting, the number of permanent employees, their qualifications, in-service training, remuneration and turnover rate. It was observed that all the NGOs providing services to the Shea butter processors in the Northern Region have Boards of Directors that meet at least twice a year. They also have diverse sizes in terms of their number of employees ranging from 3 to 28 with an average of 9 employees per NGO. It is also observed from Figure 5 that majority have between 6 to 10 employees with only two NGOs having more than 16 people in their permanent employment indicating that most of the NGOs in the industry are small scale when compared to large scale NGOs that employ thousands of people on permanent basis and thousands more as volunteers. The NGOs in the Shea industry however also indicated that they engage volunteers for some of their activities and do employ temporary staff from time to time when the need arose. They also hired services of consultants and other professionals to handle specific projects or operations beyond their core mandates.

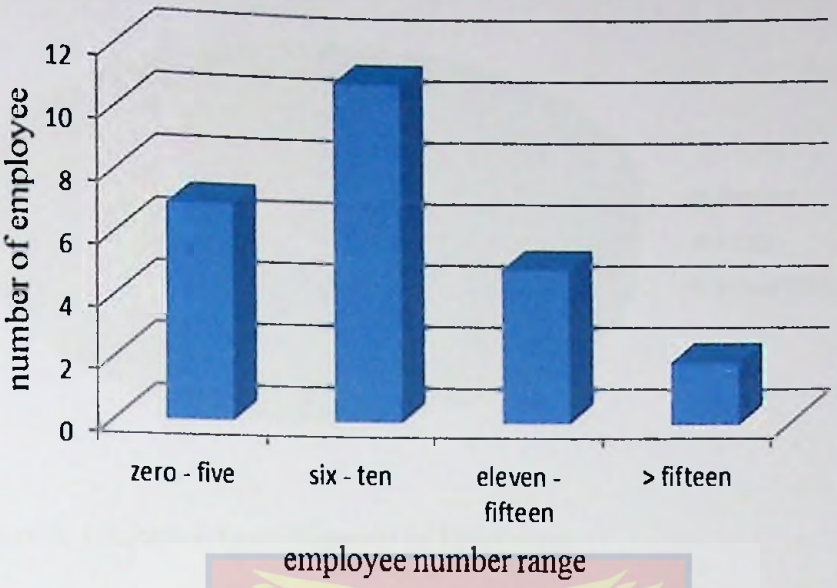

Figure 5: Number of Employees in the NGOs

Source:Field Survey, Akosile (2017)

It is observed from Figure 6 that majority of the employees (about 53%) working for the NGOs have tertiary qualification indicating that the NGOs put premium on recruiting highly skilled personnel to manage their activities. A number of studies have documented positive correlation between employees' skills and organization perfomance (Caliskan, 2010; Kim and Ployhart, 2014).

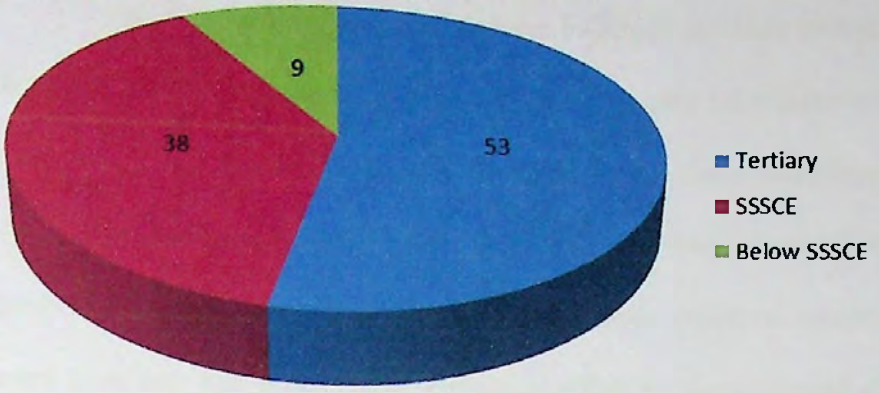

Figure 6: Education Qualifications of Employees

Source: Field Survey, Akosile (2017)

It was also observed that 66% of the employees were given training the previous year on different aspects of their operations including training on proposal writing, group formation and dynamics, capacity building, market analysis, procurement, fund raising, budget preparation, the VSLA concept, gender issues, quality Shea production, health and safety among others.

The NGOs did not disclose the actual salary range of their employees but gave strong indication that it was well competitive and compared to what business entities within the region pay. As a result, employee turnover rate among the NGOs was quite low. While some studies such as Batt (2002) and Huselid (1995) have shown a negative relationship between employee turnover rates and organizational outcomes; other studies such as Arthur (1994) and Guthrie (2001) have failed to find negative relationship and some have even reported significantly positive associations between employee turnover and organizational performance (Keck, 1997; Virany, Tushman, & Romanelli, 1992).

It can therefore be concluded that the NGOs in the Shea industry in the Northern Region have adequate capability in terms of their human resource base. They all have well constituted boards that meet at least twice a year, they employ highly skilled personnel, give them requisite in-service training and pay competitive remuneration; and therefore record low employee turnover. It is expected then that this should have a positive effect on the technical efficiency and general welfare of the small scale Shea butter processors that benefit from their services.

Physical Resources (Office, Equipment and Logistics)

Availability of physical resources is expected to facilitate the work of the NGOs to deliver services to their beneficiaries. It was observed that all the NGOs surveyed have physical addresses and offices to which they could be traced and located. It is observed from Table 7 that on average, they operate on slightly more than two rooms (2.38) per NGO. With respect to tables and chairs, it is observed that the NGOs operate on average on less than three tables and chairs per NGO given the indication that the number of tables and chairs available would not be sufficient since the average number of employee per NGO was found to be about nine persons. It was explained in some cases that most of the times, not all the staff were in the offices as some were usually on field operations. It was also observed that on average, the NGOs operate with less than three computer (2.73) suggesting that about three employees share one computer per NGO or some employees may not have schedules that require them to use computers.

Table 7-*Physical Resources of the NGOs*

Statistic	Minimum	Maximum	Mean	Std. dev.
Office Rooms	1	6	2.38	1.55
Tables & Chairs	1	6	2.58	1.58
Computers	1	5	2.73	0.72

No. of observations = 26
Source: Field Survey, Akosile (2017)

All the NGOs surveyed also reported having file cabinets for safe keeping of documents and all had fans for good ventilation. However, it is observed from Table 8 that only four representing 15.4% had fixed telephone lines and air-conditions in their offices. A significant 65.4% of the NGOs also reported having at least one vehicle for their operations while 38.5% and 19.2% respectively had motorcycles and bicycles for their operations. Some of the vehicles were however registered in the personal names of the CEOs of the NGOs making it difficult to regard them as properties of the NGOs that were registered as companies limited by guarantee.

It can therefore be concluded that the NGOs in the Shea industry in the Northern Region are above average in terms of physical resources such as office space, mailing addresses, tables & chairs, computers and vehicles. This seems to contradict the notion that is held out there that many NGOs in Ghana have no physical spaces to which they can be traced but operate in the vehicles and hand bags of their owners.

Table 8-*Physical Resources of the NGOs*

Fixed Telephone	Yes (15.4%)	No (84.6%)
Vehicles	Yes (65.4%)	No (34.6%)
Motorbikes	Yes (38.5%)	No (61.5%)
Bicycles	Yes (19.2%)	No (80.8%)
Air-conditions	Yes (15.4%)	No (84.6%)

No. of observations = 26
Source: Field Survey, Akosile (2017)

Financial Resources of the NGOs

Financial resources are the bedrock of any organization be it governmental, private business enterprise or NGO without which not much can be achieved (Finkler, 2001). The NGOs were asked to indicate the sources of funding for their development activities for the previous year. They indicated the major sources of funding of their activities to include the founders, self-financing from own businesses, beneficiaries/clients of their activities, local and international donor agencies. Only two of the 26 NGOs responded to the question on the actual amount of funding received in the previous year indicating that over 90% of the NGOs surveyed did not respond to the question with one indicating receipt of about GH₵200, 000.00 and the other about GH₵80, 000.00 from local and international donors. It is therefore quite difficult to make any judgment based on these two NGOs.

It is observed from Table 9 that on average, the NGOs submitted more than two proposals (2.46) to the local donor agencies with more than 50% of the submitted proposal (1.38) yielding positive results in terms of funding. Similarly,

the NGOs on the average submitted more than one proposal to the international donor agencies (1.34) with almost 70% of those proposal yielding positive results in terms of funding. It was also observed that about 74% of the funds were committed to development projects while the remaining went into administrative overheads. This is quite positive and indicates that the NGOs were committing more funds into their development activities than the administrative costs. All the NGOs also indicated that they operated accounts with banks and other financial institutions but only 20 representing 76.9% had their account audited the previous year.

Table 9-*Financial Resources of the NGOs*

Variable	Minimum	Maximum	Mean	Std. dev.
Local Proposals	0	5	2.46	1.14
Positive Local Proposals	0	2	1.38	0.64
International Proposals	0	3	1.34	0.84
Positive International Proposals	0	3	0.92	0.80

No. of observations = 26
Source: Field Survey, Akosile (2017)

It can be concluded therefore that the NGOs in the Shea industry in the Northern Region sought for funding from diverse sources both from within and outside the country. They also expended greater proportion of the amount received on the development interventions and not on high administrative

overheads. However, the fact that over 90% of the NGOs failed to declare the actual amount received from donors in the previous year couple with the fact that about 23% of them did not have their account audited for the previous year seem to suggest more need to be done to improve transparency and accountability in the operations of the NGOs. There are wide spread anecdotal evidences suggesting that many NGOs are more interested in the personal comfort of their founders and executive officers than altruistic concerns for the welfare of the underprivileged they claim to serve and on whose behalf they seek for funding.

Development Activities of the NGOs

NGOs carry out a wide range of development activities to improve the welfare of their beneficiaries or clienteles. All the NGOs surveyed had engagements with the small scale Shea butter processors providing a wide range of support services to them in the previous year ranging from training, to input supply, to marketing and livelihood empowerment. It is observed from Table 10 that each NGO on average provided services to nine Shea butter processor cooperatives with each Shea butter processor cooperatives having about 22 members each on average. This gives an estimated number of beneficiaries per NGO to be about 197 with total estimated number of beneficiaries of 5,132 for all the surveyed NGOs in the previous year. This number far exceeded the expected number of 3,629 beneficiaries which form the sampling frame for the study suggesting that other Shea butter processors different from those who registered also benefitted from the NGOs' activities.

Table 10-*Number of Beneficiaries in the Development Training*

Variable	Min.	Max.	Mean	Std. dev.
No. of Shea butter cooperatives	4	14	8.88	10.58
Average no. of members per NGO	15	30	22.23	4.79
Total No. of Beneficiaries per NGO	25	420	197.4	98.65
Estimated Total Number of Beneficiaries = 197.4 * 26 = 5,132 persons				

No. of observations = 26
Source: Field Survey, Akosile (2017)

With respect to the sources of funding supports for the NGOs' development training programme, none of the NGOs indicated the government as a source of funding for their training activities for the previous year. The main sources of funding for their training activities were from other NGOs and beneficiaries of their activities. About 42% of the NGOs indicated receiving funding from VSLAs while about 23% also indicated receiving funding for their training activities directly from the beneficiaries of the activities.

In terms of the areas of training, it is observed from Table 11 that all the NGOs indicated training on Shea butter processing and quality management as quality issues appear to be the dominant factor affecting the industry. Studies have revealed that as much as 80% or more of Shea butter leaving Africa is grade D or lower because marked deterioration would have occurred between the period

of extraction and the day of delivery to an international buyer (ASBI, 2013). The loss of quality in the post extraction period appears to be the number one impediment for African women gaining access to the international cosmetic market. In the USA and European cosmetic industry, grade A Shea butter is in high demand, but it is low in market supply (ASBI, 2013). Proper post extraction management can therefore translate into positive economic development as well as improved foreign exchange and that provided justification for all the NGOs devoting time to training on Shea butter processing and quality management.

Other areas that received attention for training in the previous year include group dynamic training with about 38% of the NGOs providing training on group dynamics to their beneficiaries. Group dynamics training seeks to provide the members in the Shea butter processors cooperatives the requisite skills to form a group and work together as a team in order to achieve the collective and individual objectives of the group. Other areas of training in the previous year included Shea cosmetics formulation, record keeping, marketing, health & safety and energy-saving. Table 11 presents the areas of training and the percentage of NGOs that provided the training.

Table 11-*Areas of Training for Small Scale Shea Butter Processors*

Area of Training	No. of NGOs provided Service	Percentage of NGOs
1. Shea quality management	26	100
2. Group Dynamics	10	38.5
3. Record Keeping	10	38.5
4. Marketing	10	38.5
5. Health & Safety	10	38.5
6. Energy Saving	7	26.9
7. Shea Cosmetics Formulation	5	19.2

No. of observations = 26
Source: Field Survey, Akosile (2017)

The NGOs were asked to assess the performance of their development training programs using a number of indicators such as relevance of their interventions measured by the beneficiaries' involvement in decision making at the different stages of the interventions, as well as the effective ness, efficiency, impact and sustainability of the programs. In terms of the decision making at the different stages of the interventions, the NGOs were asked to rank the degree of participation of the beneficiaries at all stage from receiving information, passively giving information, consultation, and collaboration to self-mobilization. It is observed from Table 12 that the degree of consultation with the beneficiaries ranges from the lowest degree of receiving information to the third degree of consultation with mean score (2.32) suggesting that they tend toward the second

degree of participation; that is passively giving information in which beneficiaries were allowed to state their views about any issues concerning the training but the NGOs took the final decision on what was to be done. The NGOs justified this position with the argument that most of the funding they got from donors came with strict specifications about how the interventions should be, leaving them with little rooms for consultation with the beneficiaries.

With respect to the effectiveness of the interventions, it sought to establish the extent to which the objectives set for a particular intervention were achieved. Three variables were used to capture the effectiveness of the interventions and these include attendance, interest and adoption of the innovations, strategies or technologies being introduced to the beneficiaries. It is observed from Table 12 that all the three variables suggest that from the view point of the NGOs, their interventions in the previous year were above averagely effective with 4.5/5 (90%) attendance rate, 4.46/5 (89%) of the participants showing interest and commitment and 4.27/5 (85%) of the beneficiaries at various stages of adoption of the innovations, strategies and technologies being introduced.

Table 12-*Participation in Decision Making and Effectiveness of Interventions*

Variable	Min.	Max.	Mean	Percentage
Decision Making	1	3	2.32	46.4
Attendance	3	5	4.50	90.0
Interest	4	5	4.46	89.2
Adoption	3	5	4.27	85.4

No. of observations = 26
Source: Field Survey, Akosile (2017)

The NGOs were asked to indicate how costly the interventions implemented in the previous year. From Table 13, it is observed that the NGOs saw the interventions to be averagely costly meaning the costs of the interventions were within their expectations. Also, the NGOs were requested to assess the impact of their interventions in terms of improvement in the income of their beneficiaries, opportunity for job creation through business expansion and general improvement in the welfare of the beneficiaries. It is again observed from Table 13 that from the perspectives of the NGOs, 3.69/5 (73.8%) of their beneficiaries had improved income following their interventions. Also from the NGOs' perspectives, 3.54/5 (70.8)% of their beneficiary Shea butter processors created new jobs due to business expansion as a result of their interventions. Surprisingly, even higher percentage 4.04/5 (80.8%) of the women indicated a general improvement in their welfare due to the interventions of the NGOs. This the

NGOs attributed to the fact that even for some who might not have witnessed increase in income over the period, they had learnt how to better manage their earnings to improve their welfare and that of their family.

Table 13 -*Cost of Interventions of the NGOs and Impact on the Beneficiaries*

Variable	Min.	Max.	Mean	percentage
Intervention cost	3	4	3.24	64.8
Income Impact	3	4	3.69	73.8
Impact on Job	3	5	3.54	70.8
Welfare Impact	3	5	4.04	80.8

No. of observations = 26
Source: Field Survey, Akosile (2017)

This study also sought the perceptions of the NGOs on the sustainability of the interventions they made in the operations of their beneficiary Shea butter processors. The study considered three dimensions of sustainability as financial sustainability, operational sustainability and environmental sustainability. It is observed from Table 14 that the NGOs believed their interventions had financial sustainability of 4.08/5 (81.6%), operational sustainability of 3.92/5 (78.4%) and environmental sustainability of 3.69/5 (73.8%). While these sustainability rates appear to be extremely high, it is also clear that the least among them was environmental sustainability indicating that more efforts need to be expended to ensure not only financial and operational sustainability of the interventions but

more importantly environmental sustainability. This is to ensure that the future generations are not short changed of their natural rights to the nations' resources even as those resources were bequeathed to us by our forebears. The NGOs explained that the environmental sustainability issues go beyond the scope of their abilities but rest mostly with nation's policy makers to see the importance of protecting other non-timber forest resources such as Shea trees.

Table 14-*Sustainability of the NGOs' interventions*

Variable	Min.	Max.	Mean	Percentage
Financial S.	3	5	4.08	81.6
Operational S.	3	5	3.92	78.4
Environment S.	3	5	3.69	73.8

No. of observations = 26
Source: Field Survey, Akosile (2017)

It can be concluded from the foregoing that from the perspectives of the NGOs in the Shea industry in the Northern Region, their development interventions should be rated above average in terms of relevance, effectiveness, efficiency, impact and sustainability.

Relationships/Partnerships with other Relevant Stakeholders in Development

The third element of NGOs' capability is how they manage their relationships and partnerships with other relevant stakeholders in development (Lewis, 2001). Data was therefore collected on how the NGOs in the Shea industry in the Northern Region related or partnered these stakeholders in the previous year. It is observed from Table 15 that all the NGOs registered with the

Registrar General's Department before commencement of operations in their areas. Only 16 of the NGOs representing 61.5% however renewed their registration in the previous year. Those who did not renew their registration cited lack of time, forgetfulness and lack of serious punitive measures as reasons they did not renew their registration at the Registrar Generals Department in the previous year. Likewise, all the NGOs registered with district assembly where they operate their activities but again, only 16 representing 61.5% renewed their registration with the district assembly in their operational areas giving similar reasons as above. As expected, all the NGOs also operate bank account for their operations but not all have their account audited in the previous years. 20 of the NGOs representing about 77% have their account audited while the rest did not. Similar reasons of lack of time, forgetfulness and lack of serious punitive measures were again cited.

Apart from training facilitation, NGOs also facilitate procurement of necessary inputs for the processing of Shea butter. Some of the critical inputs for the processing of Shea butter include Shea nuts, firewood, water, and packaging containers. Having formal relationships with suppliers of these resources can therefore facilitate the operations of their beneficiary small scale Shea butter processors. The NGOs were therefore asked to indicate whether or not they facilitated supply of inputs to the small scale Shea butter processors and whether they had formal relationship with suppliers of these inputs. It was observed that 21 of the NGOs did facilitate supply of inputs and almost the same number, 20 of the NGOs representing about 77% had formal relationship with the input

suppliers in the previous year. NGOs also facilitate sales and marketing of Shea butter and products both in the domestic and international markets. Also having formal relationship with both the domestic and international buying agencies will facilitate the marketing and sales of these products. As such the NGOs were also asked whether or not they facilitated sales and marketing of Shea butter and whether or not they had formal relationships with buying agencies in the previous year. It was observed that all the NGOs facilitated marketing and sales of Shea butter in the previous year and almost all, 25 representing 96.2% had formal relationship with buying agencies in the previous year.

The media is an important partner to the NGOs in bringing development to the people. Media help to create awareness about the activities of the NGOs and benefit that could accrue to the beneficiaries of the NGOs by participating in those activities. The NGOs were asked to indicate whether they had any media engagement in the previous year to promote Shea butter and products. It was observed that 22 of the NGOs representing 84.6% had media engagement in the previous year to promote Shea butter and products. Also, there are many NGOs in the study areas all concerned about bringing development to the people. At times, some of the NGOs may be doing the same activities in the same area thereby duplicating efforts. When NGOs collaborate with other NGOs or agencies to bring development to the people, there is a synergy which can create better impact of the activities on the beneficiaries. The NGOs were therefore asked whether they had any collaboration with other NGOs or government agencies to undertake development activities in the previous year. All the NGOs indicated collaborating

with other NGOs in implementing their development programs in the previous year. The study also sought to establish whether the NGOs belong to local and international industry association. Twenty-one of the NGOs representing 80.8% indicated belonging to the local industry association but only five of them representing 19.2% have certificate of recognition. Also, five of the NGOs indicated belonging to international industry associations and they all possessed certificate of recognition to that effect.

Table 15-*Relationships and Partnerships with other Stakeholders in Development*

Variable	Yes	%	No	%
Registration with Reg. General	26	100	0	0
Renewal of Registration	16	61.5	10	38.5
Registration with District Assembly	26	100	0	0
Renewal of Registration	16	61.5	10	38.5
Operating Bank Account	26	100	0	0
Audited Financial Account	20	76.9	6	23.1
Supply of Inputs	21	80.8	5	19.2
Formal Relationships with Input Suppliers	20	76.9	6	23.1
Support for Sales and Marketing	26	100	0	0
Formal Relationships with Buying Agencies	25	96.2	1	3.8
Engagement with Media	22	84.6	4	15.4
Collaboration with others	26	100	0	0
Membership of Local Industry Association	21	80.8	5	19.2
Certificate of Recognition	5	19.2	21	80.8
Membership of International Industry Assoc.	5	19.2	21	80.8
Certificate of Recognition	5	19.2	21	80.8

No. of observations = 26
Source: Field Survey, Akosile (2017)

It can therefore be concluded that the NGOs in the Shea industry in the Northern Region have above average competencies in relating with other relevant stakeholders in development including government agencies, financial institution, input suppliers, buying agencies, the media and other NGOs.

To compute the NGOs capability index therefore, the averages for the different components are summed up as followed:

Human Resources = 12/18

Physical Resources = 12/19

Financial Resources = 5/13

Development Activities = 17/25

Relationships and Partnerships = 12/25

Total = 58/100 or 58%

Table 16 gives a summary of distribution of NGOs' capability index.

Table 16-*Summary of Distribution of NGOs' Capability Index*

Mean	Standard dev.	Minimum	Maximum	No. of Obs.
58.31	11.05	45	84	26

Source: Field Survey, Akosile (2017)

To the best of the knowledge of this author, this is a pioneering work on computing capability index for NGOs in the Shea industry and other NGOs in Ghana. Therefore, there are no comparative studies with which to compare the results of this study. However, the validity or otherwise of the computed capability score will be assessed partly by the extent to which it predicts the

technical efficiency and poverty outcomes of the women small scale Shea butter processors in the Northern Region.

In conclusion, this study found the NGOs in the Shea industry in the Northern Region to have above average capability in terms of their human resources, physical resources, financial resources, development activities and; relationships and partnerships with other relevant stakeholders in development in the Northern Region. It is therefore expected that this will have a positive effects on the technical efficiency and general welfare of their beneficiary small scale Shea butter processors in the Northern Region.

CHAPTER SIX

TECHNICAL EFFICIENCY OF THE SMALL SCALE SHEA BUTTER PROCESSORS

Introduction

The second objective of this study seeks to estimate the technical efficiency of the small scale Shea butter processors in the Northern Region. Technical efficiency is a measure of how efficiently a given workforce accomplishes a task, when compared to the standard in that industry or setting. There are several different ways to measure technical efficiency, depending on the type of products and services being produced, and the end goal. It is sometimes used interchangeably with labour productivity and for this reason; Fry et al (2004) suggested that the two measures be separated so as to alienate personal efforts in achieving optimal output (technical efficiency) from other factors of production.

Social-Economic/Demographic Characteristics of the Respondents

This section begins with descriptive analysis to help explain the social-economic/demographic characteristics of the women small scale Shea butter processors in the Northern Region which ultimately combine to determine their efficiency as well as welfare. The socio-economic/demographic characteristics described in this section include the age, experience in Shea butter processing, location of household, household size and composition, headship of household, marital status and education attainment.

All the respondent small scale Shea butter processors were female. Even though the sampling frame used indicated 4% male in the Shea butter

cooperatives, it was discovered that the male members serve mainly as secretaries/administrators of the groups and did not engage in Shea butter processing hence their exclusion from the sample. It was observed that the ages of the respondents range from 19 to 70 years with a mean age of 45.35 years indicating that most of the respondents small scale Shea butter processors fall within the mid-working age. About 13% of the respondents were over 60 years old. It is observed from Figure 7 that the respondents from Tamale metropolis and Savelugu, the two most populated districts had their mean age higher than the overall average while the opposite was true for East Mamprusi and West Mamprusi districts. The results were consistent with the 2010 Population and Housing Census which indicated the youthful nature of the population of the region with the potential to contribute positively to national development if properly harnessed.

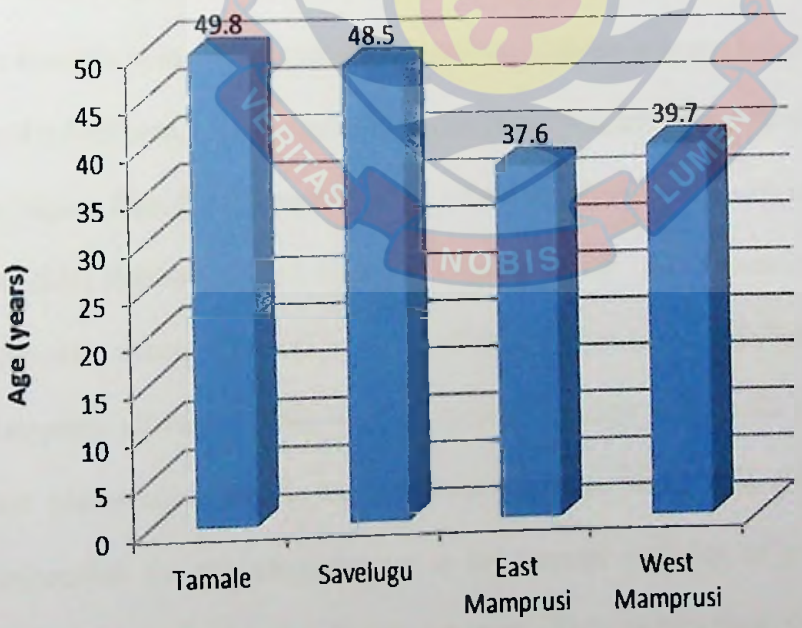

Figure 7: Mean Age of the Respondents

Source: Field Survey Data, Akosile (2017)

The 2010 Population and Housing Census defined a household as "a person or a group of persons, who lived together in the same house or compound and shared the same house-keeping arrangements" (GSS, 2013). In general, a household consists of a man, his wife, children and some other relatives or a house help who may be living with them (GSS, 2013). The number of people in the household and their structure and composition are very important in determining the welfare of the members of the household. This is because resources accruing to the household are shared among the members. If there are more dependents in the household than the number actively engaged in productive activities, the welfare of the household may reduce compared to the household with fewer dependents. This study collected data on the size, structure and composition of the households of the small scale Shea butter processors in the Northern Region. It was observed that the average household size of 8.2 persons per household in the sample was far higher than the average household size of 7.7 for the Northern Region recorded in the 2010 Population and Housing Census and far higher than the national average of 4.4 persons per household as observed in the 2010 Population and Housing Census. It was also observed that the three relatively urban districts, that is Tamale Metropolis, Savelugu, and West Mamprusi all have higher than the overall average household size leaving only East Mamprusi with the below overall average household size. One possible explanation for this phenomenon is the general mobility of people from rural areas to urban centers as relatives are more likely to join their kith and kin in the

urban centers especially when there is possibility of lending helping hands in their economic ventures such as Shea butter processing and its attendant benefits.

To better understand the dependency ratio of the households, the study further decomposed the household members into their various age groups. It was observed that 32.13% of the household members were below 15 years of age considered as entry age into the workforce in Ghana (Otoo, et al 2009). The elderly above the age of 64 years also constituted about 3% of the sampled households giving the impression that about 35% of the household members in the sample were dependents; leaving only 65% within the working age bracket. The high population of children below 15 years particularly implies that government has to allocate more resources to basic school funding as well as primary health care in order to adequately prepare these children to contribute meaningfully to national development. It is also observed from Figure 8 that Savelugu district had disproportionately higher percentage of both children below 15 years as well as elderly above 64 years with its implications for high dependency and poverty.

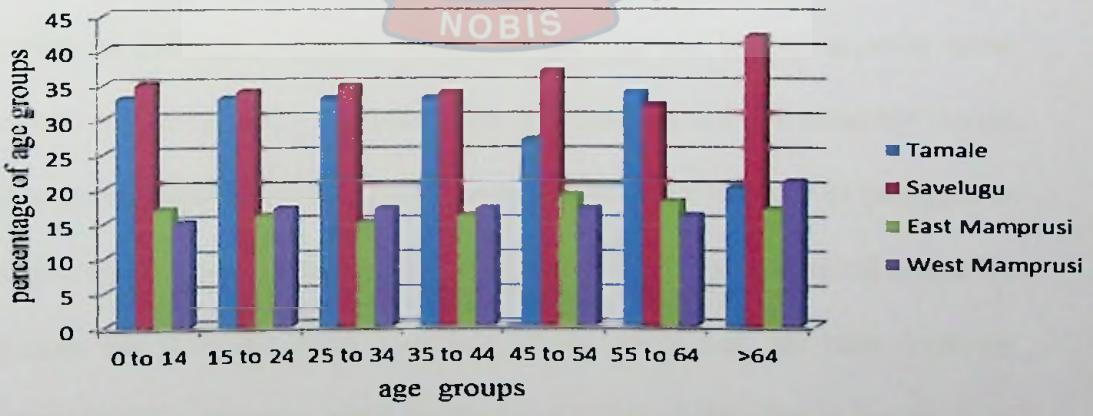

Figure 8: Age Group of the Households
Source: Field Survey, Akosile (2017)

A rather surprising observation in the data was the composition of household heads. About 91% of the households in the data set were male headed compared to 85% recorded for the region in the 2010 Population and Housing Census. Even some of the women who reported living with their sons considered their sons as the heads of the households as they claimed men are leaders of the society; and this might have accounted for the high number of male headed households recorded in the data.

Marriage is a social union or legal contract between people called spouses that create kinship. It can also be defined socially to encompass formal traditional and religious unions that bring two people together (GSS, 2013). Marital status of an individual can help explain his or her labour activities with married people more likely to be engaged in economic activities than their unmarried counterparts as a result of family responsibilities. It was observed that about 78% of the sampled small scale Shea butter processors were married compare to the 59% of the women in the region recorded in the 2010 Population and Housing Census. This shows high premium the Northern society placed on the marriage institution as unmarried women above certain age are looked at with some disrespect. About 15% of the women were also widows and the plausible reason for greater proportion of female being widowed could be because of polygynous marriages. In polygynous marriages, if the man dies, he leaves behind a number of widows but if on the other hand one of the wives dies, the man does not consider himself a widower since he has other wives. Additionally, husbands in the region are more often than not much older than their spouses and, therefore,

are more likely to die earlier, leaving behind relatively younger widows (GSS, 2013). There were no noticeable differences in the marital status of women in the four districts surveyed.

The bedrock of every society is to have a system of constant training and instruction for the development of the mind and character of its citizens. In general, education contributes to the process of building attitudes and technical skills of the individuals in the society and also increases the ability to understand and respond to new ideas (GSS, 2013). Education is often considered as important variable in labour market analysis as it facilitates ones employability, helps reduce unemployment and improves efficiency of the workforce (Young, 2012). It is observed from Figure 9 that none of the women small scale Shea butter processors had any tertiary education. In fact, only about 4% of them completed secondary school education and this compared with 3.7% of female with secondary education in the region in the 2010 Population and Housing Census. It was quite surprising to observe however that West Mamprusi had the highest percentage of Middle school/JHS and SSSCE graduates.

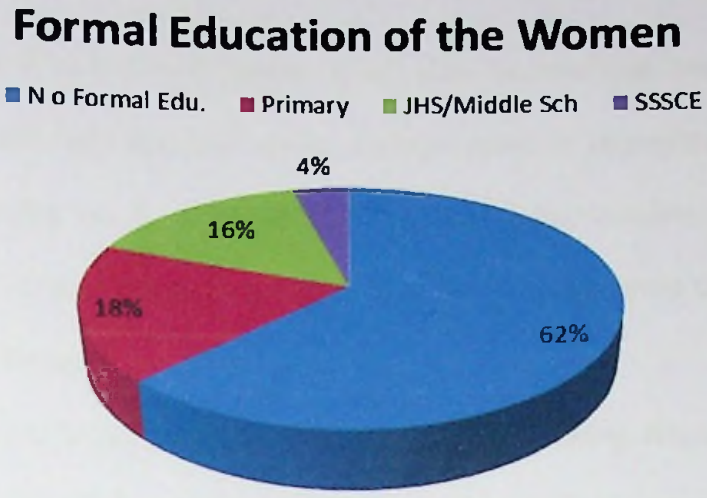

Figure 9: Formal Education of Respondents

Source: Field Survey, Akosile (2017)

Small Scale Shea Butter Processing Activities

The main focus of this study is the small scale Shea butter processing, its efficiency and effects on the welfare of the women who engaged in it. This section therefore seeks to discuss some of the main activities involved in Shea butter processing and the characteristics of the women. The women were asked to indicate whether they did Shea butter processing as full time jobs or combined with other economic activities. It was observed that 88.2% of the women engaged in Shea butter processing in full time in the previous year while the rest had other economically productive engagements. For those who had other economic activities; soap baking, dawadawa processing, rice processing, hair dressing and farming were the most common activities they engaged in.

It was also observed that the women had diverse experience with respect to Shea butter processing ranging from 1 to 50 years with an average of 16 years'

experience in Shea butter processing. It was also observed that women in Tamale Metropolis and Savelugu had above average years of engagement with Shea butter processing and the opposite true for the other two districts. This seems to suggest that commercial processing of Shea butter started from the more urban areas before the rural ones.

Shea nut is the main input in Shea butter processing. Regular availability and supply of it will then enable the women to process all year round. The women were asked to indicate the sources from which they get Shea nut for processing. About 86% of the women indicated buying all the Shea nuts processed the previous year with the remaining picking some of it and buying when their stock is exhausted. None of the women indicated self-picking as the only source of Shea nut for the previous year as this category of women (self-picking) do not process Shea butter all year round. In fact, the study deliberately targeted those who processed all year round so as to avoid those who may be underemployed in the industry due to inadequate supply of Shea nut and other inputs. Underemployment and technical inefficiency were two most common causes of working poverty in Africa and elsewhere (Domfe, 2013; Joassart-Marcelli, 2004, Osmani, 2003). The study therefore focused on the technical efficiency of the fully employed small scale Shea butter processors in the Northern Region.

The main activities in Shea butter processing are sorting and cleaning the raw Shea nuts, drying, crushing the nuts into smaller grits, roasting the grits, kneading and cooking & solidification. The processing of Shea butter by all the surveyed small scale Shea butter processors were semi-mechanized in the sense

that some of the operations were done manually whiles the rest involved use of machines. Sorting & washing, drying, kneading and boiling were manually done in all cases whereas crushing, roasting and milling were mechanized in most of the processing centres. The women indicated the advantages of the semi-mechanized methods of processing Shea butter over the traditional methods to include production of higher quality butter, saves time, uses less labour, water and fuel wood; produces less smoke, less injuries and less stress among others.

The first stage in the processing of Shea butter involves sorting the raw Shea kernels to remove unwanted materials such as stones, sticks, rotten and germinated nuts. The sorted nuts are then thoroughly washed with water to remove any remaining dirt. The cleaned raw Shea kernel is then shade dried to reduce the moisture contents to make it suitable for the next stage. The next stage in the Shea butter processing is the crushing of the raw kernel to obtain small sized grits for effective roasting. In most of the centres, this activity is performed with electric powered crusher which reduces the time of the operation and human drudgery associated with manual crushing. However, frequent breakdown of the crushers and lack of electricity sometimes force the women to resort to manual crushing with mortar and pestle with its attendant problems. The crushed grits are sometimes dried for a few minutes.

The next stage after crushing is roasting of the grits to facilitate easy oil extraction. During the roasting process, the grits are subjected to very high-heating temperatures and continuously stirred to obtain a uniform brown colour. All the surveyed processors used roaster stove which ensures uniform roasting of

the grits and efficient energy use. The roasted grits are then spread in a cool dry place to cool down. The grits are then milled with an electric powered milling machine to convert them into paste ready for kneading.

Kneading involves the gradual stirring of the paste first with cold water to soften the paste for easy kneading by hand. Hot water is then added to help melt out the butter which began to appear on top as a white fluffy substance. It is a labour intensive activity that required machine but none of the surveyed women indicated using machine for this operation; they all did it manually. The solid white fluffy crude Shea butter was then scooped from the kneading pot into a cooking pot while stirring to allow water to evaporate leaving the melted solid to boil as oil. The boiled oil was then decanted, impurities sieve off and the purified oil left to solidify. The solidified butter would be packaged for the market.

The women were asked to indicate the quantity of Shea nuts they process per processing cycle. It is observed from Table 17 that the women were very diverse in the quantity of Shea nut they process per processing cycle from a low of 50kg to 880kg with an average of 233.73kg per processing cycle. However, there were significant differences observed across the districts with women in the Tamale Metropolis having above the average quantity of Shea nuts processed per processing cycle.

Table 17 -*Quantity of Shea nut Processed in a Processing Cycle*

District	Mean (kg)	Std. dev.	Minimum	Maximum	Freq.
Tamale Metro	324.42	135.86	85	880	64
Savelugu	222.83	104.02	110	450	64
East Mamprusi	158.16	59.71	110	255	31
West Mamprusi	170.91	103.77	50	425	44
All Districts	233.73	127.80	50	880	203

Analysis of Variance

Source	SS	df	MS	F	Prob >F
BetweenGroups	884681.55	3	294893.85	24.30	0.0000
Within Groups	2414654.55	199	12133.94		
Total	3299336.1	202	16333.347		

Source:Field Survey, Akosile (2017)

It took an average of 4 days for all the women to complete a processing cycle. The main inputs used in Shea butter processing are fuel wood, water and labour. Other costs incurred during the processing are for crushing and milling using electric powered crusher and milling machine respectively; and also packaging materials. The women were asked to indicate the quantity of fire wood, water and labour utilized for a full processing cycle.

Labour was the only input that was utilized in every stage of the processing cycle. It is observed from Figure 10 that at the sorting and washing stage, the women indicated spending on average about 1 hr. 30 minutes with the

women in Tamale spending more time on this activity than the overall average. It was realized that women in Tamale spent more time on washing especially because of adequate availability of water and the desired to achieve the highest quality standard Shea butter for both domestic and international market. Women in the West Mamprusi on the other hand spent the least time on this activity because of inadequate water supply and the need to economize same even though they acknowledged the effects on the quality and price of their Shea butter. At the crushing stage, the women spent on average about 32 minutes when electric powered crushers were employed. However, due to frequent break down of the crushers and unstable electricity supply, the women were sometimes compelled to resort to manual crushing which consumed on average 2 hours 25 minutes to crush the same quantity of Shea kernels. Women in the East Mamprusi and West Mamprusi reported more frequent use of manual labour for crushing for the above reasons.

On average, 1 hour 48 minutes was expended on roasting as roaster stoves which promote efficient energy use and save time were utilized by all the surveyed women. There was no significant difference noticed in the four districts surveyed with respect to labour man-hour for roasting. Milling also took an average of about 30 minutes when electric powered milling machine was utilized. However due to frequent breakdown of the machines and erratic electricity supply, it sometimes took the women as long as 3 hours 15 minutes for manual beating and grinding. Even with all the human drudgery involved, they did not

usually achieve the same smoothness of the paste compared to the machine milled ones.

Kneading was done manually by all the women surveyed as none of the processing centres had machines for this operation. It took the women an average of 2 hours 15 minutes to complete the kneading process. Boiling/cooking also took an average of 1 hour 45 minutes to complete. Finally, the boiled oil was left to solidify overnight for about 12 hours before packaging which took about 35 minutes. In all, it took an average of about 12 man-hours to complete a processing cycle when crushing and milling were manually done while it took about 9 man-hours to complete it when electric powered crusher and milling machines were utilized.

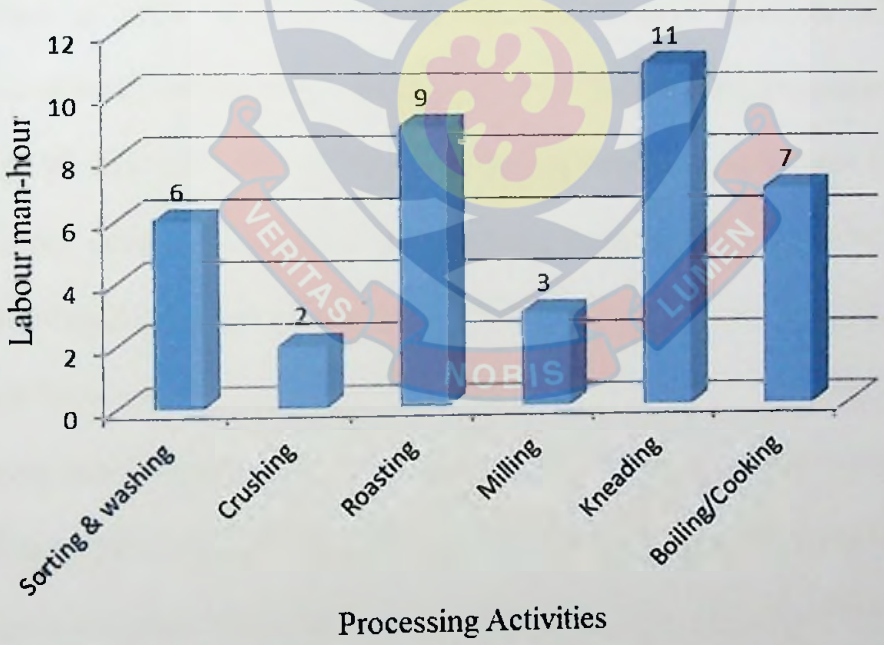

Figure 10: Labour Man-Hour for a Processing Cycle

Source: Field Survey, Akosile (2017)

Water is used at two main stages of Shea butter processing, that is the sorting & washing stage and the kneading stage. Small quantity of water is also utilized at the packaging stage. The women were asked to indicate the quantity of water utilized at the various stages. It is observed from Figure 11 that on average, the women used 25 litres of water at the sorting & washing stage. However, water usage varied significantly among the Shea butter processors according to availability and ease of access with those in Tamale Metropolis recording higher volume of water for this operation than the other three districts. Gyau-Boakye and Dapaah-Siakwan (1999) reported that in some rural settings where there was acute shortage of water, processors did not wash the kernel at all thereby reducing the quality of Shea butter produced. Kneading is the most water consuming operation in Shea butter processing. The women were asked to indicate the volume of water utilized at this stage and it was observed that the women used on average 95 litres of water. As expected, women processors in Tamale Metropolis used more water than the other three districts followed by women in Savelugu district. Small quantity of water was also required during packaging and the women were asked to indicate the volume of water utilized at this stage. It was observed that the women used on average 13 litres of water for packaging with no significant difference noticed among the districts. It can be concluded that about 133 litres of water was utilized for a complete processing cycle with women in Tamale Metropolis and Savelugu utilizing above the average and East Mamprusi and West Mamprusi utilizing below the average.

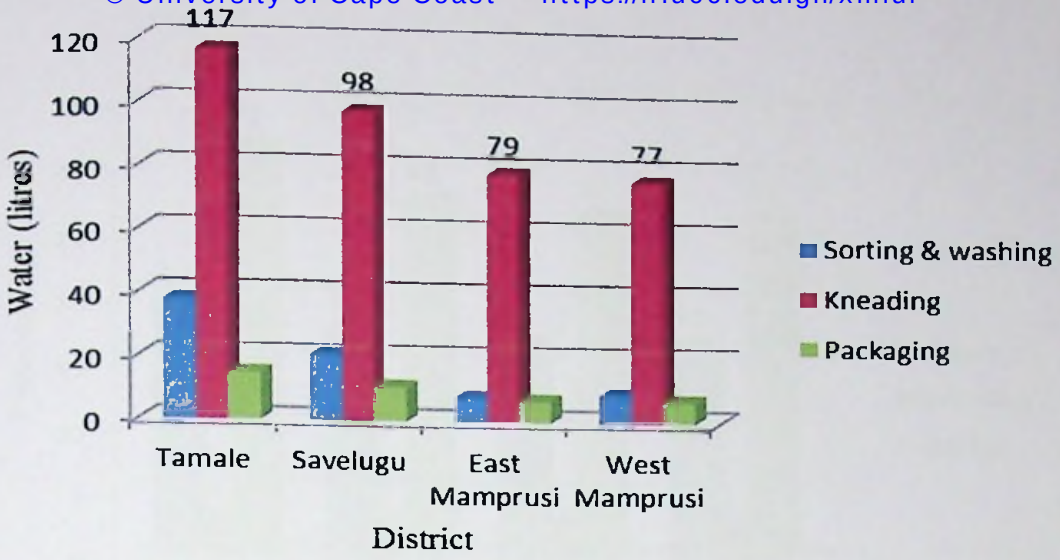

Figure 11: Water Utilized for a Processing Cycle

Source: Field Survey, Akosile (2017)

Fuel wood is another major input used in Shea butter processing for roasting the grits and boiling the oil. It is also used to boil water used for kneading. It is observed from Figure 12 that on average, about 19kg of firewood was used for roasting the grits and 31.4kg for boiling the oil. The women also indicated using 2.6kg of firewood for boiling water for the kneading process. In all, about 54kg of firewood was required to complete a processing cycle. The women processors from Tamale Metropolis appeared more efficient with energy use as they used less than the average quantity of firewood compared to the other districts. They were also more conscious to supplement the firewood with the Shea residue as a source of fuel than women from the other districts because the unit cost of firewood in Tamale Metropolis was higher than elsewhere.

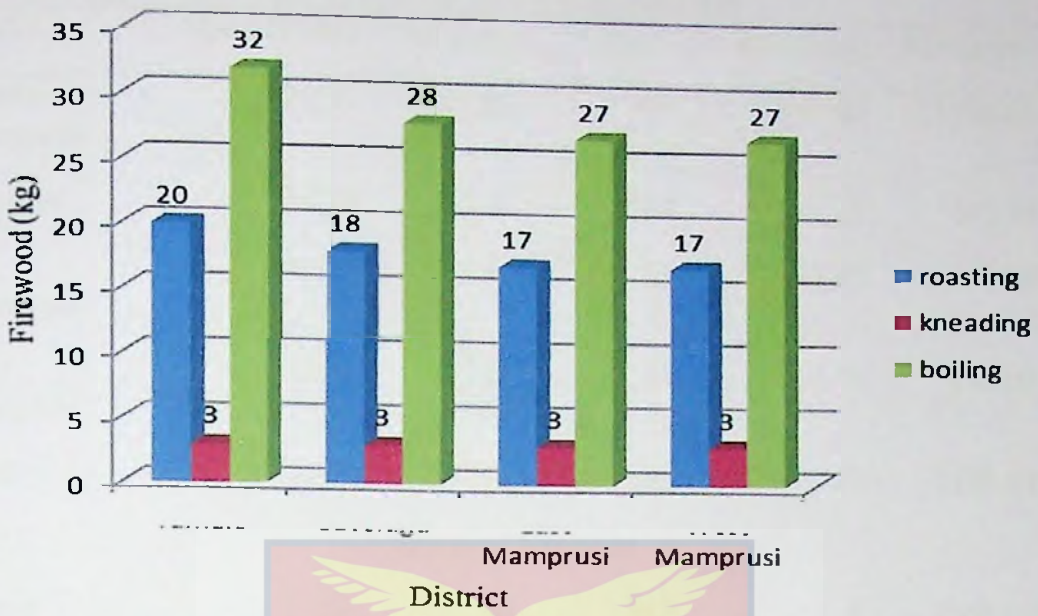

Figure 12: Quantity of Firewood Consumed in a Processing Cycle

Source:Field Survey, Akosile (2017)

It is observed from Table 18 that the average cost of the Shea nuts processed per processing cycle was about GHC301.79. It is also observed that significant differences exist across the districts from the analysis of variance with F statistic of 24.84 significant at 1% alpha level. Tamale Metropolis recorded highest cost on the Shea nuts with an average spending of about GHC421.41 per processing cycle because the processors there had larger scale than women in the other districts. The women processors in the East Mamprusi district had the smallest scale and therefore the least cost for Shea nuts processed. They were also the least diverse in their scale of production judging from the lower standard deviation compared to the other districts.

Table 18 -*Cost of Shea Nuts Processed in a Processing Cycle*

District	Mean (GH₵)	Std. Dev.	Freq.	Minimum	Maximum
Tamale Metropolis	421.41	177.60	64	110.00	1138.82
Savelugu	286.49	135.20	64	142.35	582.35
East Mamprusi	203.39	76.53	31	142.35	330.00
West Mamprusi	219.36	133.93	44	64.70	550.00
Total	301.79	166.73	**203**	64.70	1138.82

Analysis of Variance

Source	SS	df	MS	F	Prob >F
Between Groups	1529898.33	3	509966.1	24.84	0.0000
Within Groups	4085697.23	199	20531.14		
Total	5615595.55	202	27799.98		

Source:Field Survey, Akosile (2017)

In terms of the cost of the main inputs, it is observed from Figure 13 that on average labour costs GHC21.00 per processing cycle but about 73% of the labour service was provided directly by household members with no direct payments going to the workers. There were no significant differences observed in terms of labour costs as the higher per unit cost of labour in Tamale Metropolis was offset by more labour utilization in East Mamprusi and West Mamprusi due to frequent manual crushing and milling as a result of machine breakdown. It was also observed that the average cost of water per processing cycle was GHC2.46 with women processors in Tamale utilizing and paying more for water than women processors in the other districts. However, women in Tamale had easy

access to the commodity because many had water storage tanks at the processing centres. Firewood also cost GHC17.39 per processing cycle with women processing in Tamale Metropolis paying more per unit of the commodity even though they were more efficient in its utilization than the women in the other districts as they supplement with Shea residuals from previous processing activities. Other costs incurred were for crushing and milling with machines and packaging containers. Crushing and milling cost GHC4.50 on average per processing cycle while packaging containers on average cost nGHC2.08 per processing cycle.

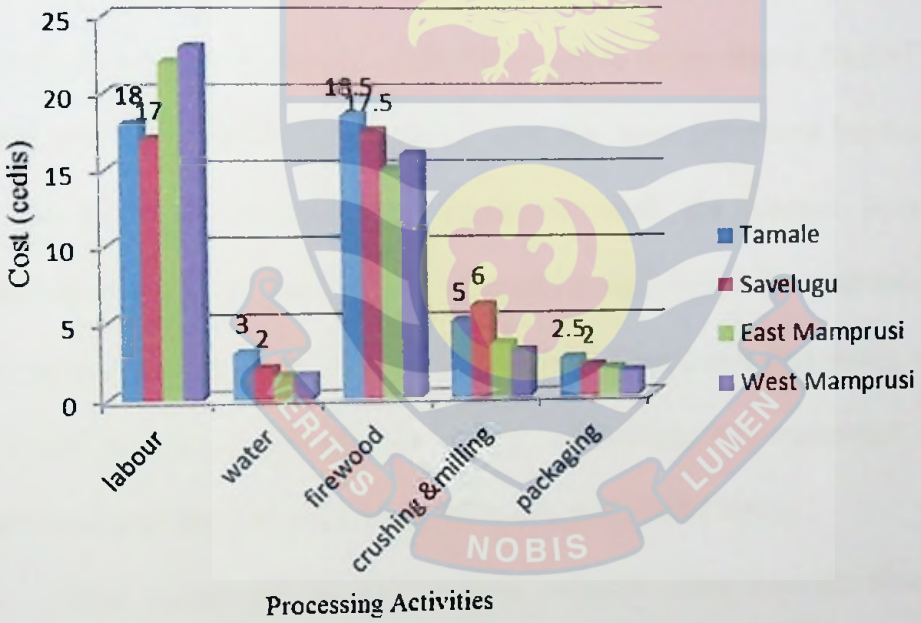

Figure 13: Costs of the Main Inputs for Shea Butter Processing

Source: Field Survey, Akosile (2017)

It was observed from the foregoing that Shea nuts cost about GHC300 on average for a processing cycle and about GHC47.00 for the other major inputs

with women processors in the Tamale Metropolis expending about GHC421.00 on average on Shea nuts and about GHC50.00 on average on the other major inputs far in excess of the average amount because of the larger scale of production.

Commercial Shea butter processing is a capital intensive business venture and one cannot operate a successful enterprise without adequate capitalization. The women Shea butter processors were asked to indicate sources of capital for their Shea butter processing activities. It was observed that about 83% of the women received some level of pre-financing from the buying agents especially in the form of supply of raw Shea nuts to be processed. SEKAF Ghana Limited and Savannah Fruits Company were the most prominent buying agents that had pre-financing contract arrangements with the women Shea butter processors in the study areas. SEKAF Ghana Limited especially established Shea butter processing centres equipped with improved Shea butter processing methods and facilities such as platforms for drying and sorting; and equipment such as electric powered crusher and milling machines and roaster stoves.

Also, significant level of financial supports came from the Shea butter processing cooperatives through the VSLA concept where the women made regular savings and were able to borrow from the savings. It is observed from Figure 14 that about 74% of the women accessed loan from VSLA with loan portfolio ranging from GHC100.00 to GHC500.00 and repayment period from two to twelve weeks at an interest rate of 20%. Almost all the women indicated being able to pay back the loan within the repayment period and they also

indicated satisfaction with the terms of the loan. However, about 83% of the women Shea butter processors who took loans also indicated that the loans taken were insufficient to enable them expand the scale of their Shea butter processing. Other sources of capital indicated by the women include microfinance institutions (15.4%), family and friends (6.2%) and personal savings (3.7%). Microfinance services were provided mostly by Agricultural Development Bank, Action Aid Ghana, Bonzali Rural Bank, and Sinapi Aba Trust. It was also observed that the women processors in the Tamale Metropolis had the highest share from all the sources and that some of the women had multiple sources of capital for the Shea butter processing business.

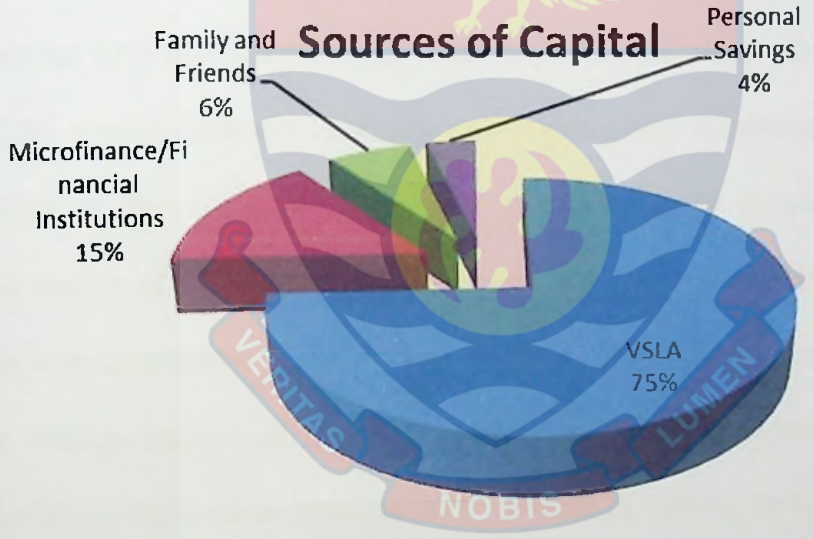

Figure 14: Sources of Capital for Shea Butter Processing
Source: Field Survey, Akosile (2017)

Development Interventions by the NGOs

Development training is one of the main interventions of the NGOs in the Shea industry to equip the small scale Shea butter processors with the

requisite skills to improve upon their production and marketing of Shea butter and related products as well as general improvement in their welfare activities. The women were therefore asked to indicate whether or not they took part in any training programs organized by the NGOs in the previous year. It was observed that all the women had taken part in at least a training program in the previous year.

The women Shea butter processors were also asked to indicate the areas of training they undertook from the NGOs the previous year. As indicated by the NGOs, Shea butter production and quality management was an area all the women indicated having training on. Their responses on the other areas of training were not different from what the NGOs indicated. For example, 64.5% of the women indicated receiving training on group formation & dynamics and 32.6% on Shea cosmetics formulation. Table 19 presents the areas of training and the number of women who benefitted from the training. It was also observed that the women attended between 1 and 4 training programs in the previous year with an average training of 2.25 per woman Shea butter processors. There were no significant differences observed in the number of training received by the women from different districts.

Table 19-*Areas of Training Received by the Women Shea Butter Processors*

Area of Training	No. of Shea Butter Processors	Percentage of Shea Butter Processors
1. Shea quality management	203	100
2. Group Dynamics	131	64.5
3. Shea Cosmetics Formulation	91	44.82
4. Record Keeping	66	32.6
5. Marketing	50	24.63
6. Health & Safety	48	23.65
7. Energy Saving	42	20.69

Source: Field Survey, Akosile (2017)

Just like the NGOs were asked to assess the level of participation of their beneficiary small scale women Shea butter processors in decision making at the different stages of the interventions, so were the women asked to make their own assessment of their participation level in decision making. It was observed that the women really felt like they were not adequately consulted in decision making as the mean score of 1.15 showed that the women were only receiving information on the interventions that were to be made without their opinions being sought. This was lower than the average score of 2.32 given by the NGOs which implied the second degree of participation which is passively giving information by the beneficiaries (Leeuwis and Van den Ban, 2004). However as explained earlier, the NGOs justified the low participation of the beneficiaries in decision making by the stringent conditions attached to the funds by the donor

agencies. This is contrary to bottom-up approach to development interventions being encouraged in recent times to ensure commitment of the beneficiaries of development interventions and better impacts of the interventions (Blanchard, 1988) and (Cernea, 1984).

The women were also asked to assess the effectiveness of the training programs given by the NGOs in terms of attendance by the beneficiaries, interest shown in the programs and adoption of the innovations, technologies or strategies being promoted by the interventions. It is observed from Table 20 that the women Shea butter processors also rated the effectiveness of the interventions slightly below what the NGOs gave with average scores of 3.41, 3.43 and 3.10 for attendance, interest and adoption respectively compared to the NGOs' average scores of 4.50, 4.46 and 4.27 for the same variables. This implied that while the NGOs believed the interventions were highly effective in achieving their objectives, the beneficiary Shea butter processors perceived the interventions to be slightly above average effective. Both verdicts however gave a positive outlook of the interventions but also showed the need for joint mutual participation of the interventionists and the beneficiaries at all stages of the interventions including the conception, implementation and evaluation of the interventions. The low standard deviations of the scores also indicated high level of consensus within the two groups.

Table 20-*Participation in Decision Making and Effectiveness of Interventions*

Variable	Min.	Max.	Mean	Std. dev.
Decision Making	1	3	1.15	0.98
Attendance	1	5	3.41	2.00
Interest	1	5	3.43	2.01
Adoption	1	5	3.10	0.98

Source: Field Survey, Akosile (2017)

To establish the cost efficiency of the interventions, the NGOs were asked to assess the cost of the interventions and they were more qualified to do so because they mostly incurred the costs. However, the women Shea butter processors were also asked to assess the costs of the interventions of the NGOs from their own perspectives. It was observed that the women found the costs of the interventions to be average and within their expectations.

The women were also asked to assess the impacts of the interventions in terms of income, job creation through business expansion and general improvement in welfare. It is observed from Table 21 that the women rated the impacts of the training interventions to be average in terms of income, job creation and general welfare. This implied that the women again rated the impact of the interventions slightly below the NGOs' assessment of the interventions. The women also seemed to disagree with the NGOs' assessment of higher impacts of the interventions on the general welfare improvements than income

and job creation. The high standard deviation for the job impacts also suggested that the women had divergent views on the impacts of the interventions on job creation.

Table 21-*Cost of Interventions of the NGOs and Impact on the Beneficiaries*

Variable	Min.	Max.	Mean	Std. dev.
Intervention cost	1	4	3.04	0.51
Income Impact	1	5	2.98	1.74
Impact on Job	1	5	3.10	3.34
Welfare Impact	1	5	2.99	1.74

Source: Field Survey, Akosile (2017)

The sustainability of the NGOs' development interventions was also considered to be very important in eradicating poverty among the women small scale Shea butter processors. The women were therefore asked to assess the sustainability of the training programs and other interventions of the NGOs in terms of financial, operational and environmental sustainability. Even though both the NGOs and the women had positive outlook of the sustainability of the interventions, it was observed that the women Shea butter processors rated the sustainability of the interventions below the NGOs' perception. Whereas the NGOs perceived the interventions to be highly sustainable, the women small scale Shea butter processors perceived them to be averagely sustainable. Table 22 presents the financial, operational and environmental sustainability of the

interventions from the perspectives of the women small scale Shea butter processors.

Table 22-*Sustainability of the NGOs' interventions*

Variable	Min.	Max.	Mean	Std. dev.
Financial S.	1	5	2.98	1.69
Operational S.	1	5	2.99	1.71
Environment S.	1	5	2.86	1.68

Source: Field Survey, Akosile (2017)

Challenges of the Small Scale Shea Butter Processors

The women were also asked to indicate three most important challenges facing them in the small scale Shea butter processing. It is observed from Table 23 that inadequate capital, low market, low prices of butter, high inputs cost, frequent breakdown of equipment, injuries, lack of protective gears and lack of storage facilities were the most common challenges cited by the women. With respect to low capital, the women lamented that they needed to increase the scale of their production but could not do so due to lack of capital. They also lamented that the pre-financing contract arrangement with some of the buying agents deprive them of realizing the full profit that should accrue to them as the buyers alone determined the market price of butter. Frequent breakdown of equipment especially electric powered crusher and milling machines at some processing centres meant that some of the women had to resort to manual crushing and grinding with its attendant drudgery. Also, no technology for kneading at any of

the processing centres visited during this study making the women complain of tedious requirement of the manual kneading process. More than 80% of the women indicated having storage facilities but there were still few ones without the storage facilities. Also, the few women who supplement self-picking of Shea nuts with purchase complained of lack of protective gears against snake and other reptiles.

The women were asked to suggest possible ways by which the government and other development partners could help improve the operations of small scale Shea butter production and marketing. Addressing the challenges identified were the suggestions made by the women. They appealed to the government to subsidize the main inputs in Shea butter processing especially the electric powered crushers and milling machines, roaster stoves and efficient energy sources such as LPG. They also appealed to the government to institute credit schemes with interest rate below the commercial credit regime of the private commercial banks to enable them access loans to expand their operations. They again suggested that government intervene in fixing the price of the processed Shea butter as is done with cocoa to enable them reap the full benefit of their labour. Finally, those who pick the Shea fruits also appealed for the supply of protective gears against snake bites.

Table 23-*Challenges of the Small Scale Shea Butter Processors*

Challenges	Frequency	Percentage
Inadequate capital	161	26.44
High inputs cost	137	22.50
Low market/price	103	16.91
Insufficient water supply	95	15.60
Injuries	64	10.51
Lack of protective gears	36	5.91
Lack of storage facilities	13	2.13
Total	**609**	**100**

Source:Field Survey, Akosile (2017)

Estimates of the Technical Efficiency

First, the Shea butter output per processing cycle is reported in Table 24. It is observed that average output of Shea butter processed per processing cycle across the four districts is 70.12kg from the average of 233.73kg Shea nuts processed translating into about 30kg of Shea butter from 100kg bag of Shea nuts. Only Tamale metropolis recorded higher than average output of 96.47kg of Shea butter from the average of 324.42kg of Shea nuts processed per processing cycle. Similarly, Tamale has the enterprise with the highest production unit of 255kg of Shea butter. While East Mamprusi recorded the lowest average of 48.16kg of

Shea butter from the average of 158.16kg of Shea nuts processed per processing cycle, the smallest production unit of 14kg of Shea butter per processing cycle was recorded in the West Mamprusi district.

Table 24- *Production Output of Shea Butter Per Processing Cycle*

District	Mean (kg)	Minimum	Maximum
Tamale	96.47	27	255
Savelugu	66.73	30	135
East Mamprusi	48.16	30	78
West Mamprusi	52.16	14	132
All Districts	70.12	14	255

Source:Field Survey, Akosile (2017)

Technical efficiency of the women Shea butter processors are estimated from the specified stochastic frontier production function. The mean technical efficiency of the women Shea butter production processors was obtained by dividing the sum of the technical efficiency scores by the total number of the women. The data suggests as observed in Figure 15 that predicted efficiencies to be substantially different among the women small scale Shea butter processors ranging from 0.09 to 0.89 with an average of 0.55 with women processors from Tamale exhibiting better efficiencies than women in the other districts. However, such wide variations in worker-specific efficiency levels have been observed in other studies especially in developing countries (Amaza, 2000; Chinwuba & Odjuvwuederhie, 2006 and Domfe, 2013).

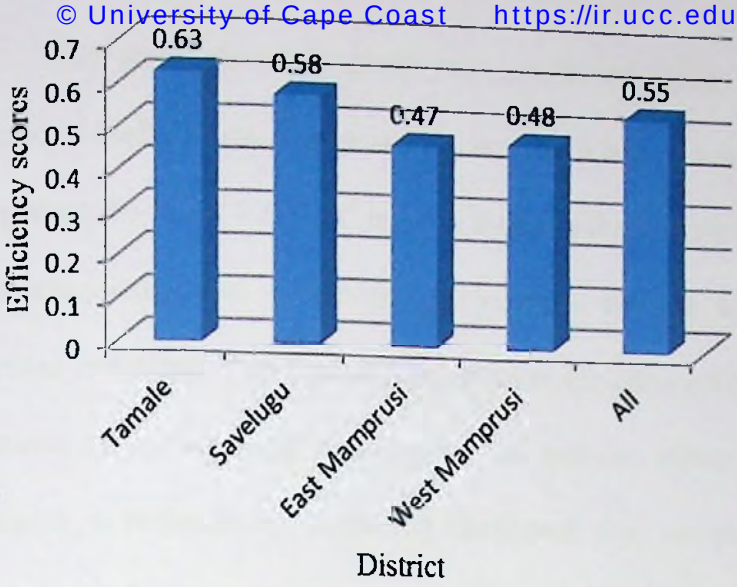

Figure 15: Technical Efficiency of the Women Shea Butter Processors

Source: Field Survey, Akosile (2017)

Results from Stochastic Frontier Production Function

This section discusses the empirical estimation of the various factors that affect the technical efficiency of the women small scale Shea butter processors. We began by investigating whether there was technical inefficiency component in the specified model. According to Aigner, Lovell and Schmidt (1977), this is necessary because if a test proves that there is no technical inefficiency in the specified model, then it would not be very useful to use stochastic frontier production model. In other words, the absence of inefficiency in the model means that all the deviations in the values of the estimated parameters are due to random shocks which are beyond the control of the worker. In that case, the Ordinary Least Square (OLS) might be a useful analytical technique.

The study therefore employed Likelihood Ratio Test to test for the presence of inefficiency. This was done through a test of a null hypothesis, Ho: $\sigma^2 = 0$, against the Hi: $\sigma^2 > 0$. If σ^2 is zero, it means there is no technical inefficiency in the specified model and therefore stochastic frontier would not be suitable analytical technique. The output from frontier includes estimates of the standard deviations of the two error components, σv and σu, which are labeled sigma_v and sigma_u, respectively. In the log likelihood, they are parameterized as $\ln\sigma^2 v$ and $\ln\sigma^2 u$, and these estimates are labeled /lnsig2v and /lnsig2u in the output. Frontier also reports two other useful parameterizations. The estimate of the total error variance, $\sigma^2 S = \sigma^2 v + \sigma^2 u$, is labeled $sigma^2$, and the estimate of the ratio of the standard deviation of the inefficiency component to the standard deviation of the idiosyncratic component, $\lambda = \sigma u/\sigma v$, is labeled lambda.

The results illustrated by Table 25 show that σ^2 is not equal to zero and therefore, there is technical inefficiency in the specified model. We therefore reject Ho, giving credence to the statistical significance of the parameter estimates of the stochastic frontier production function. From the variance parameter, the Gamma (γ) value was found to be 0.4624 which means that 46 percent of the variation in Shea butter output was due to factors related to technical inefficiency of the processors while about 54 percent due to random shocks beyond the control of the Shea butter processors such as weather conditions.

Table 25-*Likelihood Ratio Test of Inefficiency (Ho: $\sigma = 0$)*

Variable (Test)	Coefficient	Standard Error
/lnsig2v [log (σv)]	-3.54432***	0.3042
/lnsig2u [log σu)]	-3.604622***	0.8888
Sigma v [(σv)]	0.1699	0.2585
Sigma u [(σu)]	0.1649	0.0732
Sigma2 $(\sigma^2)/[\sigma^2v+ \sigma^2u]$	0.0028	0.0007
Lambda $(\lambda) = [\sigma^2v/\sigma^2u]$	1.6515	0.1592
Gamma $(\gamma) = \sigma^2u/(\sigma^2u+\sigma^2v)$	0.4624	
Likelihood Ratio Test (LRT)	373.49	P > LRT = 0.0231

Source: Field Survey, Akosile (2017)

Determinants of Technical Inefficiency among the Small Scale Shea Butter Processors

Having ascertained the presence of technical inefficiency in the specified model, a stochastic frontier regression was then employed to estimate the causes of the technical inefficiency of the women small scale Shea butter processors. The first part of the regression identifies factors of production that enhance Shea butter output while the second part shows the various factors that affect the technical efficiency of the women.

The results of the regression as observed in Table 26 indicate that Shea nuts, water and packaging cost have the expected positive relationships with Shea butter output. However, only Shea nuts is statistically significant at 1% percent

but the coefficient is also very high suggesting that a percentage increase in the quantity of Shea nuts processed will increase Shea butter output by 45%. Water and packaging cost however are not statistically significant inputs. The negative coefficients for firewood, labour and cost of crushing the nuts rather suggest that Shea butter output will improve with a decrease in the use of these inputs. This may be plausible if there is wastage in the quantity of firewood and labour being used and if the cost of crushing the nuts is excessively high. In the same vein, the cost of milling the crushed and roasted Shea nut also showed negative coefficient and is significant at 5% alpha level suggesting that Shea butter output will improve with a decrease in the cost of milling. It may be that the current operators of crushing and milling machines are charging exorbitant prices for these services since these women do not have the machines by themselves.

With respect to the inefficiency effect component of the regression, a variable that appears statistically significant with a negative coefficient would improve efficiency of the women Shea butter processors and vice versa. It is observed from the estimates in Table 26 that age, experience, level of education, volume of credit and remittances received all have the expected negative coefficients. This suggests that increasing their levels would improve the technical efficiency of the women Shea butter processors. However, they are not statistically significant. The number of training received has the expected negative coefficient and is significant at 1% alpha level indicating that training reduces technical inefficiency of the women. This is particularly interesting given that the women received either one or two training the previous year with about 76% of

the women receiving only one training. Marital status appears not to have any effects on the technical efficiency of the women as the coefficient is not statistically significant. The dummy variable for location with Tamale (urban centre) as reference has the expected negative coefficients and is statistically significant at 5% alpha level indicating that on the average, Shea butter processors in Tamale are more technically efficient than their colleagues in other districts. This is consistent with the results of other studies such as Ahmad (2002) and Domfe (2013) that have found technical efficiencies of workers in urban areas to be higher than those in the rural areas because of better access to productive resources and markets.

With respect to the effects of the capability index of the NGOs on the technical inefficiency of the women, we match the capability index of the NGOs with the small scale Shea butter processors that received services from them in the previous year. The results suggest that the capability index of NGOs is significant at 1% alpha level. However, the coefficient is positive making it difficult to make a judgment about the direction of its influence on the technical efficiency of the women. This may be so because the NGOs' capability is not an attribute of the women Shea butter processors.

Table 26-*Stochastic Frontier (Generalized) Estimates of the Determinants of Technical Inefficiency of the Women Small Scale Shea Butter Processors*

Variable	Parameter	Coefficient	Standard Error	T- statistics
Labour Productivity				
Factor				
Shea nuts	βi	0.450***	0.096	4.70
Firewood	βii	-0.172	0.280	-0.62
Water	βiii	0.360	0.322	1.12
labour	βiv	-0.0005	0.0498	-0.01
Crushing	βv	-0.179	0.225	-0.79
Milling	βvi	-0.356**	0.158	-2.25
Packaging	βvii	0.259	0.159	1.62
Inefficiency Effect				
Constant	α_0	0.249	1.252	0.2
Age	αi	-0.0001	0.0016	-0.09
Experience	αii	-0.0001	0.0015	-0.04
Married	αiii	0.0038	0.0113	0.33
Location	αiv	-0.1053**	0.0469	-2.24
Education	αv	-0.0044	0.0088	-0.50
Household size	αvi	0.0041	0.0044	0.93
Number of Training	αvii	-0.1645***	0.0551	-2.99
Credit Amount	αviii	-0.00003	0.0001	-0.25
Capability Index NGOs	αix	0.3602***	0.1078	3.34
Remittances	αx	-8.62e-06	0.00015	-0.06
No of observations	203			
F (17, 185)	34.65	Prob > F =	0.0000	
R^2	0.7610			
Adj. R^2	0.7390			

Significance Level: *** 1%, ** 5%, * 10%
Source: Field Survey, Akosile (2017)
Note: a variable with negative coefficient reduces technical inefficiency

In conclusion, this study found that increasing the quantity of Shea nuts processed and lowering the cost of milling in particular will improve the output of Shea butter among the small scale Shea butter processors in the Northern Region. In terms of the inefficiency components, the number of training received appears to be very important in reducing inefficiency among the women. Also, Shea butter processors resident in Tamale appear to be more technically efficient than those in the other districts perhaps because of better access to productive resources and

markets. Finally, it is difficult to make judgment on the effects of the capability index of the NGOs because though the coefficient is statistically significant, the positive sign is not expected.

CHAPTER SEVEN

POVERTY OUTCOMES OF THE SMALL SCALE SHEA BUTTER PROCESSORS AND LINKAGES WITH THEIR TECHNICAL EFFICIENCY AND NGOs' CAPABILITY

Introduction

The third objective of this study is to determine the poverty levels of the small scale Shea butter processors in the Northern Region. Poverty has many dimensions and is characterized by low income, malnutrition, ill-health, illiteracy and insecurity, among others. The impact of the different factors could combine to keep households, and sometimes whole communities, in abject poverty (GSS, 2014). This study defined the poverty status of the women in terms of consumption expenditure, household assets, access to services and human development.

Consumption Expenditure of the Women Small Scale Shea Butter Processors

In using the consumption expenditure approach to modeling household poverty, various items were included in the household consumption expenditure including household consumption of home produced goods and services, recorded cash expenditures on items such as food, services and housing and the non-cash incomes in kind which was included as an imputed expenditure. By carefully including household consumption of home produced goods and services, the problem of underestimation often associated with consumption expenditure measures for subsistence agricultural households and domestic consumption of the output of non-farm production activities was minimized (GSS, 2014 and

Coulomb & McKay, 2008). The women were therefore asked to indicate how much they expended on each items at convenient intervals for easy recall. For example, the women were asked to indicate the frequency with which they purchase food items such as cereals and grains like maize, rice, and sorghum and how much was expended on them within the time intervals. They were also asked to indicate how much was spent on other ingredients such as tomatoes, oil, pepper and all others.

Again, they were asked to indicate how much was expended on house rent or rent estimate for unrented houses. Expenditure on health, education, clothing, water, electricity and other energy sources, and mobile phone credits were also taken. All the expenditure items captured at different time interval were then converted to annual consumption expenditure. It is observed from Table 27 that the average consumption expenditure of GHC708.01 for the households of the women Shea butter processors was quite low. A number of factors seem to explain the low level of consumption expenditure among the women small scale Shea butter processors.

Firstly, most of the women could not confidently recall their consumption expenditure of a number of household consumption items including food, house rent, and water and electricity bills and had to be assisted to estimate to arrive at the figures. Many also confessed that they were not the best to answer questions on household expenditure because they were not responsible for most expenditure items. Secondly, even though this study sought to follow the methods used by the Ghana Statistical Service, time and financial constraints did not allow

for data to be collected at regular intervals over a twelve months period as did GSS (2014). Again, this study found the average household size among the sampled small scale Shea butter processors to be substantially larger (8.2) compared to the average of 7.7 for the Northern Region in the 2010 Population and Housing Census with high dependency ratio and this might have also contributed to lowering the average consumption expenditure among the households of the women small scale Shea butter processors. Despite these challenges however, it was observed that significant differences exist across the districts from the ANOVA with F statistic of 22.67 significant at alpha level of 1%. The households of the women in the Tamale Metropolis recorded the highest average consumption expenditure of GHC976.48 while the households of the women in the West Mamprusi had the lowest average consumption expenditure of GHC524.82.

Table 27-*Estimated Household Consumption Expenditure*

District	Mean (GH₵)	Std. Dev.	Minimum	Maximum
Tamale	976.48	400.29	270.00	2550.00
Savelugu	656.72	30615	300.00	1350.00
East Mamprusi	530.00	175.50	300.00	780.00
West Mamprusi	524.82	314.83	140.00	1330.00
All Districts	709.59	375.13	140.00	2550.00

Analysis of Variance

Source	SS	df	MS	F (Prob > F
Between Groups	7239807.6	3	2413269.2	22.67 (0.0000)
Within Groups	21185487.5	199	106459.7	
Total	28425295.1	202	140719.2	

Source: Field Survey, Akosile (2017)

We also examined the sensitivity of the household consumption expenditure values which seeks to determine the extent of changes in household expenditures with changes in other factors such as prices of durable and non-durable goods and services. Our data suggests that households with higher expenditures spend more on durable goods and services such as mobile phone, TV, fridges, health and children's education.

Determinants of Poverty of the Households of the Women Small Scale Shea Butter Processors

A number of post-estimation techniques were adopted to ensure the robustness of the analytical procedures used for the study. For example, three variables namely, age of respondents, number of years of education and number of training received were suspected to be endogenous with the experience of the women Shea butter processors. A two-stage least square regression was therefore employed with these variables as instrumental variables for experience. Sargan chi^2 and Basmann tests however indicate over identification implying that not all the three variables are good instruments for experience. Therefore, only age was left as instrumental variable for experience.

In order to ascertain that age was a good instrument for experience, test of endogeneity was performed with the null hypothesis that the variables are exogenous. Durbin score and Wu-Hausman statistic both with alpha level less than 1% indicate the appropriateness of the instruments. Furthermore, first-stage regression summary statistics also show the fitness of the two-stage regression analysis with the minimum eigenvalue statistic of 39.88 greater than all the critical values obtained from the statistical table and with p value less than 1%.

Finally robust standard errors were fitted to obtain unbiased standard errors of OLS coefficients in case there is presence of heteroscedasticity.

We estimate the determinants of household consumption expenditure of the households of the women Shea butter processors and the empirical linkages with their technical efficiency and capability index of NGOs providing services to them. A variable with a significant positive coefficient increases household consumption expenditure, promote welfare and reduces poverty among the women small scale Shea butter processors. It is observed from Table 28 that experience, marital status, location, training received, credit, NGO capability and efficiency scores were the main determinants of household consumption expenditure of the women Shea butter processors in the Northern Region.

The results show that an additional year of experience in Shea butter processing increases household consumption expenditure by GH₵5.86 and it is significant at 5% p-value. This result is consistent with other studies such as Danso-Abbeam (2012); Kyei et al, (2011); Ogundari and Akinbogun (2010); Ogundari, (2013) and Onumah et al (2010) who have found less poverty among workers with higher experience compare to the less experience ones.

With respect to the marital status, the regression results shows that being married is statistically significant in increasing poverty among the women Shea butter processor with consumption expenditure among the households of married women on the average GH₵28.04 less than their unmarried counterparts. This result is consistent with the findings of Jose and Collado (2004) and Domfe (2013) who found that married people were more likely to be poor than non-

married ones not because of marriage itself but high level of dependents that married people take care of including their children and other relatives. There are however other studies such as Anyanwu (2013) that found monogamous marriage as a significant positive determinant of welfare especially among women in Nigeria.

The regression results also indicated that being a residence of Tamale reduces the level of poverty of the women Shea butter processors with consumption expenditure of Tamale residents being on the average GH₵86.09 higher than the other districts. This may be because they appear more efficient in their production activities, produces better quality Shea butter and get better prices. They also have better access to social amenities that make life easier. This finding is consistent with other studies such as Osinubi (2003) and Owusu et al (2010) who indicated that being resident in urban centre significantly reduces the poverty levels of a household.

The regression results also show that education is positively associated with better welfare and reduce poverty but it is not statistically significant. Jose and Collado (2004); Owusu et al (2010) and Domfe (2013) have all found significantly positive relationship between education attainment and household welfare. This is because the more educated one becomes the easier to acquire information necessary to pursue life opportunities that abound in the society. Likewise, the number of training received by the women was also found to be statistically significant in reducing poverty of the women Shea butter processors with an additional training increasing household consumption expenditure by

GH₵221.59. This is particularly huge given that all the women either attended one or two trainings in the previous year and not more.

Also, large household size seems to increase the poverty levels of the household of the women Shea butter processors for the obvious reasons of having to cater for many mouths but the coefficient is not significant. Other studies that have found household size as a negative determinant of household welfare include Gammage (1997) and Anyanwu (2013). Again, the amount of credit received by the women appears to reduce the poverty levels of the women with an additional GH₵100.00 credit obtained improving consumption expenditure by GH₵17.00. This is quite important as the credit can be used to obtain needed inputs for production. Volume of credit was however generally low among the women justifying the need for interventions that can increase access to credit. This is consistent with findings of Fissuh and Harris (2005) that credit access improves household welfare.

It is rather surprising that remittances received do not appear to have the expected positive relationship with household consumption expenditure and the coefficient is equally not significant. Finally, both the capability index of the NGOs and technical efficiency scores of the women Shea butter processors show the expected positive relationship with household consumption expenditure of the women with very large coefficients and also significant at 1% alpha level.

Table 28-*Determinants of Poverty among the Women Small Scale Shea Butter Processors*

Variable	Parameters	Coefficients	Robust std. error	z-scores
Constant	α_0	-2536.9***	281.6	-9.01
Experience	αi	5.863**	2.783	2.11
Married	αii	-28.04**	12.71	-2.21
Location (Tamale)	αiii	86.089***	20.24	4.25
Education	αiv	5.4131	3.385	1.60
Household size	αv	-2.171	2.38	-0.91
Number of training	αvi	221.59***	48.12	4.60
Credit amount	αvii	0.1665**	0.0828	2.01
Capability index of NGOs	αviii	292.99***	46.229	6.34
Remittances received	αix	0.00016	0.0643	-0.00
Efficiency scores	αx	705.08***	65.81	10.71
Diagnostic statistics				
No of observations		203		
Wald chi^2 (10)		846.86		
Prob >chi^2		0.0000		
R-Squared		0.8936		
Root MSE		121.88		

Significance Level: *** 1%, ** 5%, * 10%
Source: Field Survey, Akosile (2017)

The diagnostic statistics also show that the model is a good fit. The R-Squared value shows that the model explained about 89% of the changes in consumption expenditure or household welfare while the Wald chi^2 statistic also

shows the overall joint good effects of the explanatory variables on the dependent variable.

Remittances In and Out of the Households

A household that receives remittances from family and friends has a greater potential to escape poverty and the higher the remittances received, the higher the consumption expenditure of the household expected to be (Randazzo and Piracha, 2014). Also, the higher the remittances sent out of the household, the higher the chances of the household falling into poverty all things being equal. Remittances are usually received from family and friends working outside of the household location and remittances are sent to dependent family and friends such as students, the sick, elderly and the unemployed. The women small scale Shea butter processors were asked to indicate the amount of remittances they received and sent out the previous year. It is observed from Table 29 that the women were net receivers of remittances as the average remittances of GHC104.66 received was higher than average remittances of GHC81.52 sent out from the households. It was also observed that the women from Tamale Metropolis had the highest amount for both remittances received and sent out of the households with the women in the West Mamprusi district also sending out the lowest amount of remittances on the average.

Table 29-*Remittances in and out of the Women Shea Butter Processors' Households*

District	Remittances In (GH₵)	Std. dev.	Remittances Out (GH₵)	Std. dev.
Tamale Metropolis	170.90	141.04	110.11	87.50
Savelugu	113.59	78.54	98.28	85.01
East Mamprusi	107.42	132.16	62.19	86.73
West Mamprusi	48.82	59.58	46.29	66.15
Overall Average	104.66	108.77	81.52	86.34

Source: Field Survey, Akosile (2017)

Ownership of Household Assets by the Women Shea Butter Processors

Poverty is a multi-dimensional phenomenon and consumption-based measures need to be supplemented by other welfare indicators (GSS, 2013). This study therefore sought to examine poverty in terms of household ownership of key consumer assets. Asset-based indicators of poverty and household welfare are also easier to measure than the indicators based on consumption expenditure. The women were asked about their ownership of household assets such as fridge, stove, fan, radio, television and mobile phone.

It is observed from Figure 16 that large proportion of the women small scale Shea butter processors possessed the household consumer assets considered in the study with 93% of them possessing mobile phone, 81% television and 74%

radio. It was also observed that larger proportion of the women Shea butter processors possessed most of these household assets than was reported for the region by GSS (2014) except for fridge which less proportion (46%) of the women possessed compared to 53% reported by GSS (2014). It was also observed that larger proportion of the women in the Tamale Metropolis possessed these household items compared to the other districts except for radio which more women from Savelugu possessed more than those from the other districts.

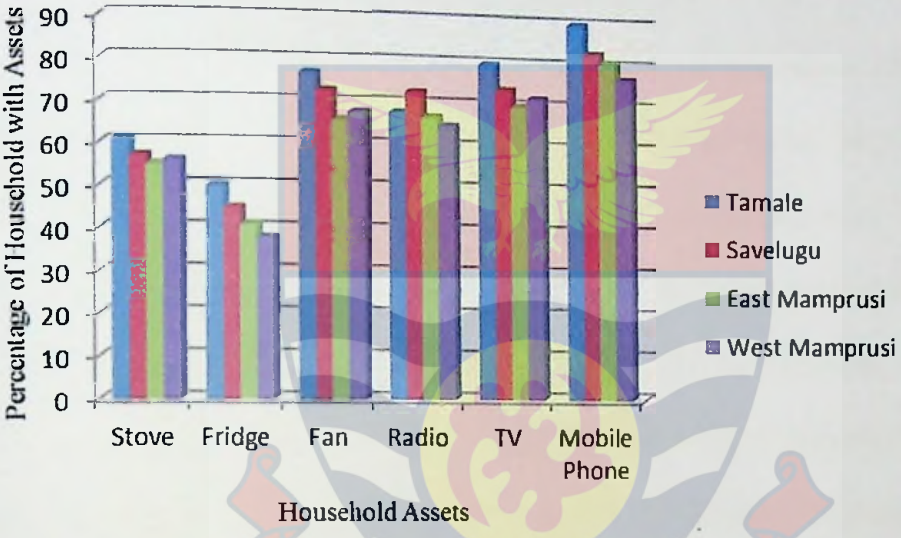

Figure 16: Possession of Household Assets
Source:Field Survey, Akosile (2017)

Access to Services by the Women Small Scale Shea Butter Processors

Access to services is another important element used to evaluate or determine whether living standards have improved, especially among households living at the bottom consumption quintiles (GSS, 2014). Access to services is determined both by their availability and affordability. Availability of services is largely determined by their locations and proximity to the households while

affordability is largely determined by the households' ability to pay for available services, and ability to pay is itself determined by cost and by income (GSS, 2014). We therefore sought to examine households' access to potable water, adequate toilet facility (a flush toilet or the KVIP toilet) and electricity which are key indicators of welfare according to the Sustainable Development Goals (SDGs). Therefore, the women were asked to indicate the sources and types of water they use for drinking and also for household chores.

It is observed from Figure 17 that about 83% of the households of the women small scale Shea butter had access to potable water in the form of pipe, protected well/spring and boreholes. GLSS 6 reported an average usage of potable water by 94% of the urban population and 64% of the rural population in the Northern Region making the findings of this study not too different. We also found an average distance of 650m from water sources which indicates that the women travelled less distance to obtain water than it used to be when it was estimated that women in parts of the Northern Region trek 2-3km in search of water (Gyau-Boakye and Dapaah-Siakwan, 1999). In terms of cost of obtaining the water, there was quite a wide variation depending mainly on whether the household fetched the water themselves or used commercial vendors and distance from the water source.

With respect to access to toilet facilities in their homes, it was most disappointing that only 45% of the households of the women Shea butter processors had improved toilet facilities in their home far lower than the figure of 70% recorded for urban households and 42% for rural households in the Northern

Region in the GLSS 6. Access to electricity was also observed not to be very different from those recorded in the GLSS 6. About 71.3% of the households of the women small scale Shea butter processors in the Northern Region had access to electricity. In fact, access to electricity was not significantly different across the four districts surveyed. GSS (2014) reported that overall, 70.7% of households in Ghana had access to electricity compared to 45.3% seven years previously with urban areas having access of about 88.5% and 48.6% for rural area.

One incidental finding of this study is the high proportion of about 18.5% of the surveyed households not paying electricity bill because ECG does not bill them for a period ranging from seven months to three years since connected to the national grid. This is quite worrying given the complaint of high tariffs by the households that pay bills. ECG should therefore do well to collect its bills from those consumers to ensure fairness since those households that do not pay bills did not complain of inability to pay but just negligence from the utility company.

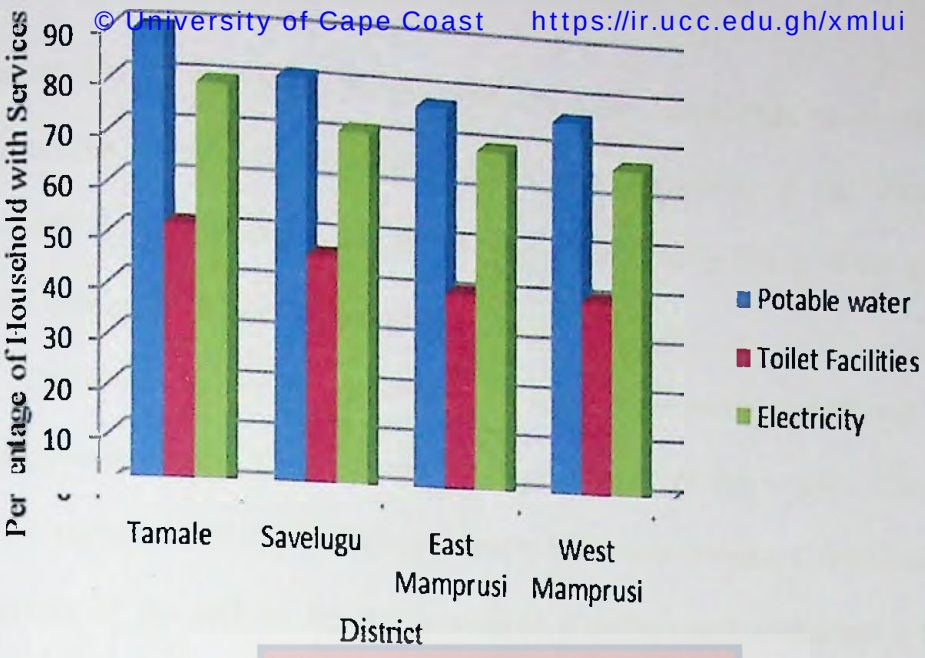

Figure 17:Access to Services by the Women Shea Butter Processors
Source:Field Survey, Akosile (2017)

Human Development Profile of the Households of the Women

Health and education are very important indicators of household welfare status. They are also considered "basic needs" and complementary to the consumption-based welfare indicators. The UN Sustainable Development Goals 3 and 4 seek to ensure good health and well-being; and quality education respectively. Both health and education also have some of the characteristics of public goods and are conceptually difficult to measure in monetary terms. The health status of a people is a strong determinant of their quality of life, level of productivity and longevity (GSS, 2014). The World Health Organization (WHO) defined health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Education has been identified as an

important tool in providing people with the basic knowledge, skills and the competencies to improve their standard of living and quality of life. Thus, the health and the educational status of the people are directly linked to the general state of development of a country (GSS, 2014).

This study sought to assess the health status of the women small scale Shea butter processors with two indicators; the proportion of the women who were actively registered with the National Health Insurance Scheme (NHIS) and the proportion of the sick or injured household members that consulted a health facility in the previous two weeks before the interview. It is observed from Figure 18 that about 80% of the women Shea butter processors in the Northern Region were actively registered with the NHIS, more than double the national coverage of 38% by NHIS (2014). This indicated the success of the NGOs in educating the women to take advantage of the NHIS program to improve their health conditions. With respect to the utilization of health facilities by the women, it was observed that about 35% of the women reported ill or injured two weeks prior to the interviews. Of those who reported ill or injured, 54% of them reported visiting a health facility for treatment compared with 26% of the rural population and 42% of the urban population in the Northern Region who visited health facilities according to the GLSS 6 report. Most of those who did not visit any health facility for treatment cited distance and lack of severity of the sickness or injury as reasons for not utilizing the health facilities. It was also observed that the women from the Tamale Metropolis consulted more health facilities than those in the

other districts most likely due to the proximity to most health facilities in the region.

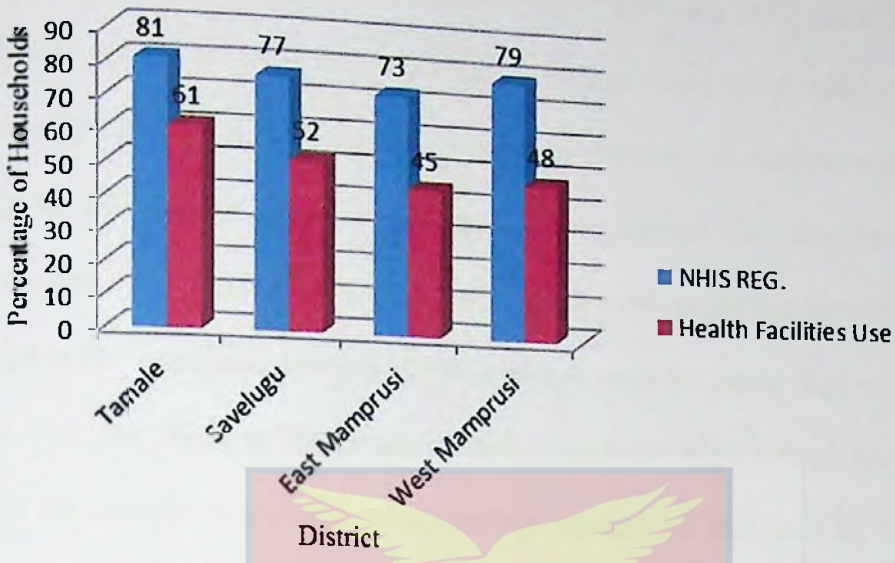

Figure 18: Access to Health by the Women Shea Butter Processors

Source: Field Survey, Akosile (2017)

With respect to access to education, we also followed the methods of the GLSS 6 by measuring Gross Attendance Rate (GAR) and Net Attendance Rate (NAR) for the basic school and senior high school. The GAR indicates the number of children enrolled in an educational level (basic or senior high) regardless of age, divided by the population of the age group that officially corresponds to the same level. The NAR on the other hand indicates the number of children enrolled at an educational level who belong to the age group (basic or senior high) divided by the population of children who belong to the age group that officially corresponds to the same level. We therefore collected data on the total number of people in the households and group them into different age

groups. To calculate the GAR, we divided the total number of persons in primary schools by the total number of children between the ages of 6 to 12 years which is the official age range for primary schools in Ghana. Also, we divided the total number of persons in JHS by the total number of children between the ages of 12 to 15 years which is the official age range for JHS in Ghana. We also divided the total number of persons in SHS by the total number of people age between 15 to 18 years in the household which is the official age range for senior high schools in Ghana. For the NAR at the primary, JHS and senior high school levels, we divided the number of children within the age bracket for that level by the total number of children in the households within that age bracket.

It is observed from Figure 19 that at the primary level, there was NAR of about 79% for boys and 76% for girls among the households of the women small scale Shea butter processors in the Northern region, higher than the 63% NAR in the Northern Region and even the national NAR of 74% in the GLSS6 indicating that the women small scale Shea butter processors are doing well in sending more of their children to primary schools. This observation may also be influenced by the presence of the school feeding program in the basic schools. For the GAR at the primary level, the results of this study were consistent with the findings of the GLSS6 with GAR of 119% for boys and GAR of 117% for girls among the households of the women small scale Shea butter processors. GSS (2014) cited the introduction of school feeding program, capitation grants and free uniforms and sandals as some of the factors that precipitated the upsurge of number of children attending schools at that level.

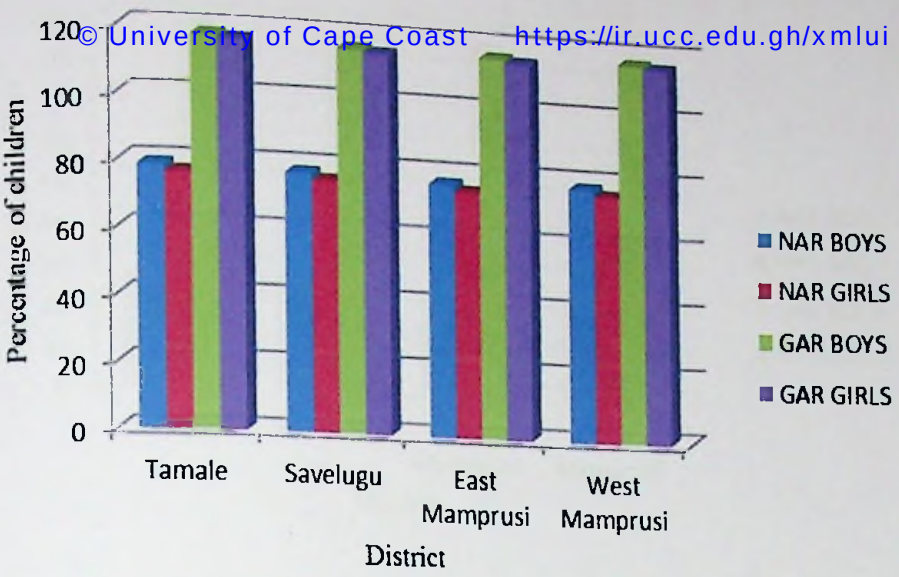

Figure 19: Primary School Net Attendance Rate & Gross Attendance Rate

Source:Field Survey, Akosile (2017)

At the JHS level, it is observed from Figure 20 that there was a significant drop in the NAR for boys and girls at 25.2% and 27.85 respectively compared to the primary level with girls NAR slightly better than that of boys. GAR at the JHS level though lower than the primary level was also higher due to the reasons cited for the primary level with boys' and girls' GAR at 87.28% and 84% respectively.

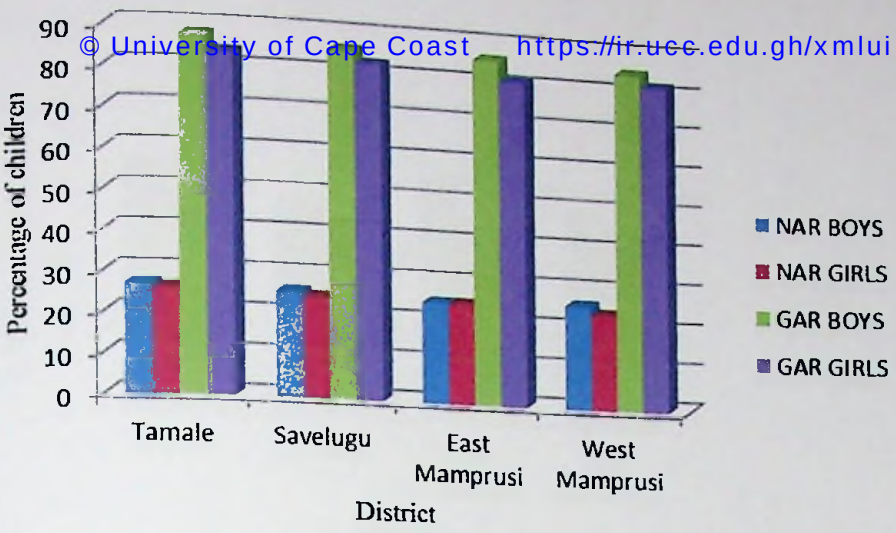

Figure 20: JHS Net Attendance Rate & Gross Attendance Rate

Source:Field Survey, Akosile (2017)

As expected, it is observed from Figure 21 that the NAR at the senior high school was very low with NAR of 15.71% and 15.14% for boys and girls respectively. Similarly, the GAR of 24.2% and 21.7% for boys and girls were low indicating the number of over-age students at that level was lower than the primary and JHS levels where there were incentives such as the school feeding programme.

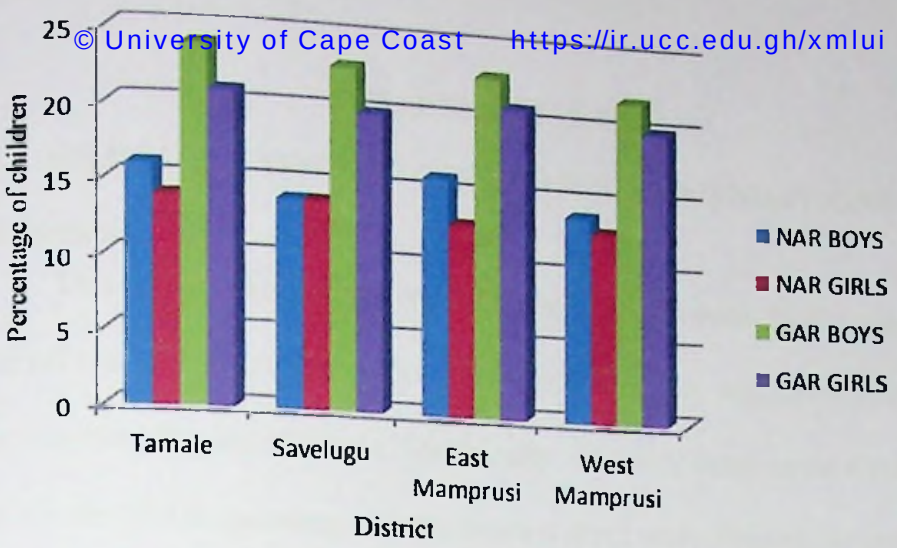

Figure 21: SHS Net Attendance Rate & Gross Attendance Rate

Source: Field Survey, Akosile (2017)

Conclusions

This chapter presented the results and discussions of the findings of the study on the poverty outcomes of the women Shea butter processors and likages with their technical efficiency and capability index of NGOs. With respect to the poverty outcomes of the women Shea butter processors, the study found that the consumption expenditure of the women were quite low. However, we caution about possible underestimation of the household consumption expenditure due to certain limitations of the study enumerated. Using possession of household assets as a measure of welfare, the study found that the women Shea butter processors were better off. Similarly, using access to services and human development measures revealed that the women were not as bad as reflected in the consumption expenditure measures.

CHAPTER EIGHT

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This study assessed the empirical linkages between NGOs' capability and small scale Shea butter processors' technical efficiency and poverty outcomes in the Northern Region of Ghana. Specifically, the study constructed a capability index for the NGOs operating with the women small scale Shea butter processors in terms of their internal management srtucture, development activities; and relationships and partnerships with other relevant stakeholders in development. The study also estimated the technical efficiency of the women small scale Shea butter processors and identified the significant determinants of technical efficiency among the women. Finally, the study assessed the empirical linkages between the poverty outcomes and technical efficiency of the women Shea butter processors and capability index of NGOs in the Shea industry. It also assessed poverty in terms of household assets, access to services and human development.

Summary of the Main Findings

The first objective of this study was to construct a capability index for the NGOs operating with the women small scale Shea butter processors in terms of their internal management structure, development activities and relationships and partnerships with other relevant stakeholders of development in the areas.

With respect to the human resources of the NGOs, the study found that all the NGOs providing services to the Shea butter processors in the Northern Region have board of directors that meet at least twice a year. They also have an average of 9 employees per NGO indicating that most of the NGOs in the industry

are small scale when compared to large scale NGOs that employ thousands of people on permanent basis and thousands more as volunteers. The study also found that majority of the employees (about 53%) working for the NGOs have tertiary qualification indicating that the NGOs put premium on recruiting highly skilled personnel to manage their activities and the employees were also given training.

With respect to physical resources, the study observed that all the NGOs surveyed had physical addresses and offices to which they could be traced and located. On the average, they operate on slightly higher than two rooms (2.38) per NGO. They also all have mailing addresses from which mailed correspondents can be delivered to them. However, only 4 out of the 26 NGOs surveyed representing (15.4%) have fixed telephone line and fax machines. This can be attributed to the proliferation of mobile phone services which make them accessible beyond official working hours reducing the necessity of maintaining fixed telephone lines. They all however reported having active e-mail addresses which also facilitate communication far and near. The study found that the NGOs had average number of tables and chairs, computers, file cabinets, fans, vehicles, motorcycles and bicycles

With respect to financial resources, the NGOs indicated the major sources of funding of their activities to include the founders, self-financing from own businesses, beneficiaries/clients of their activities, local and international donor agencies. Over 80% of the NGOs surveyed however did not respond to the questions on the amount of funding received for their activities from the different

sources for the previous year. However, the study found that on the average, the NGOs submitted more than two proposals (2.46) to the local donor agencies with more than 50% of the submitted proposal (1.38) yielding positive results in terms of funding. Similarly, the NGOs submitted more than one proposal to the international donor agencies (1.34) with almost 70% of those proposal yielding positive results in terms of funding. We also found that about 74% of the funds were committed to development projects while the remaining went into administrative overheads. This is quite positive and indicates that the NGOs were committing more funds into their development activities than the administrative costs. All the NGOs also indicated that they operated accounts with banks and other financial institutions but only 20 representing 76.9% had their account audited the previous year.

With respect to the development interventions of the NGOs, we found that all the NGOs surveyed had engagements with the small scale Shea butter processors providing a wide range of support services to them in the previous year ranging from training, to input supply, to marketing and livelihood empowerment. All the NGOs indicated training on Shea butter processing and quality management as quality issues appear to be the dominant factor affecting the industry.

The NGOs were asked to assess the performance of their development training programs using a number of indicators such as relevance of their interventions measured by the beneficiaries' involvement in decision making at the different stages of the interventions, as well as the effective ness, efficiency,

impact and sustainability of the programs. In terms of the decision making at the different stages of the interventions, the mean score suggest that there was second degree of participation; that is passively giving information in which beneficiaries were allowed to state their views about any issues concerning the training but the NGOs took the final decision on what was to be done. The NGOs justified this position with the argument that most of the funding they got from donors came with strict specifications about how the interventions should be, leaving them with little rooms for consultation with the beneficiaries.

With respect to the effectiveness of the interventions, three variables were used to capture it and these include attendance, interest and adoption of the innovations, strategies or technologies being introduced to the beneficiaries. We found that all the three variables suggest that from the view point of the NGOs, their interventions in the previous year were above averagely effective with about 90% attendance rate, 89% of the participants showing interest and commitment and about 85% of the beneficiaries at various stages of adoption of the innovations, strategies and technologies being introduced.

In terms of cost efficiency of the interventions, we found that the NGOs saw the interventions to be averagely costly meaning the costs of the interventions were within their expectations. Also, the NGOs were requested to assess the impact of their interventions in terms of improvement in the income of their beneficiaries, opportunity for job creation through business expansion and general improvement in the welfare of the beneficiaries. We also found that from

the perspectives of the NGOs, about 70% of their beneficiaries had improved income following their interventions.

With respect to the sustainability of the development interventions, the study considered three dimensions of sustainability as financial sustainability, operational sustainability and environmental sustainability. We found that the NGOs believed their interventions had financial sustainability of about 80%, operational sustainability of about 78% and environmental sustainability of about 63%.

With respect to the management of their relationships and partnerships with other relevant stakeholders in development, we found that all the NGOs registered with the Registrar General's Department before commencement of operations in their areas but not all renewed their registration or filed all necessary returns to the appropriate authorities. As expected, all the NGOs also operate bank account for their operations but not all have their account audited in the previous years. With respect to supply of inputs for Shea butter processing, we found that majority of the NGOs did facilitate supply of inputs and had formal relationship with the input suppliers in the previous year. Also, we found that all the NGOs facilitated marketing and sales of Shea butter in the previous year and almost all had formal relationship with buying agencies in the previous year. We also found that majority had media engagement in the previous year to promote Shea butter and products. Also, all the NGOs indicated collaborating with other NGOs in implementing their development programs in the previous year and this would promote synergy of efforts to bring development to the people. We also found that

majority of the NGOs indicated belonging to the local and international industry associations.

The study found that it took an average of 4 days for all the women to complete a processing cycle and that the main inputs used in Shea butter processing are fuel wood, water and labour. Other costs incurred during the processing are for crushing and milling using electric powered crusher and milling machine respectively; and also packaging materials.

The study also found that about 80% of the women received some level of pre-financing from the buying agents especially in the form of supply of raw Shea nuts to be processed. However, the women also indicated inadequate capital, high inputs costs, low market/price and insufficient water supply as the most important challenges confronting their Shea butter processing activities.

The second objective of the study was to estimate the technical efficiency of the women small scale Shea butter processors in the Northern Region. The study found the women had varying levels of technical efficiency ranging from 0.09 to 0.89 with an average of 0.55 with women processors from Tamale exhibiting better efficiencies than women in the other districts. This study also found that being resident in Tamale, number of training received and capability index of the NGOs were the main determinants that significantly affect technical efficiency of the women.

For the third objective which was to assess the empirical linkages between poverty outcomes and technical efficiency of the small scale Shea butter processors and capability index of the NGOs in the industry, we found that the

average consumption expenditure of GHC708.01 for the households of the women Shea butter processors was quite low. We therefore also used other measures and indicators of poverty or household welfare such as household assets, access to services and human development. Experience, being resident in Tamale, number of training received and amount of credit received were found to have positive effects on household consumption expenditure. Likewise, capability index of the NGOs and technical efficiency scores of the women also have significant positive effects on household consumption expenditure.

We found that large proportion of the women small scale Shea butter processors possessed the household consumer assets considered in the study with 93% of them possessing mobile phone, 81% television and 74% radio. With respect to access to services, we found that about 83% of the households of the women small scale Shea butter processors had access to potable water in the form of pipe, protected well/spring and boreholes. With respect to access to toilet facilities in their homes, it was most disappointing that only 45% of the households of the women Shea butter processors had improved toilet facilities in their home far lower than the figure of 70% recorded for urban households and 42% for rural households in the Northern Region in the GLSS 6.

About 70% of the households of the women small scale Shea butter processors in the Northern Region had access to electricity. In fact, access to electricity was not significantly different across the four districts surveyed.

With respect to human development, we found that about 80% of the women Shea butter processors in the Northern Region were actively registered

with the NHIS, more than double the national coverage of 38% by NHIS (2014). With respect to the utilization of health facilities by the women, of those who reported ill or injured, 54% of them reported visiting a health facility for treatment compared with 26% of the rural population and 42% of the urban population in the Northern Region who visited health facilities according to the GLSS 6 report.

With respect to access to education, we found that at the primary level, there was NAR of about 79% for boys and 76% for girls among the households of the women small scale Shea butter processors in the Northern Region.

Conclusions

It can be concluded from the findings of this study that the NGOs operating in the Shea industry in the Northern Region are above averagely capable based on the computed capability index. However, to the best of the knowledge of the author, this is a pioneering work on computing capability index for the NGOs in the shea industry. Therefore, there are no previous studies with which to compare the results.

With respect to the technical efficiency of the women small scale Shea butter processors, the study found that the activities of the women were semi-mechanized. Also, location, number of training received and the capability index of NGOs were found to have significant and positive effects on the technical efficiency of the women Shea butter processors. The study also found that insufficient capital, high inputs costs, low market/prices and insufficient water supply as the most important challenges confronting the Shea industry from the perspectives of the women small scale Shea butter processors.

With respect to the poverty profile of the households of the women small scale Shea butter processors, the study found that about 93% of the women fell below the consumption expenditure absolute poverty line of GHC1, 314.00. The study found that experience, being resident in Tamale, number of training received, amount of credit, capability index of NGOs and technical efficiency scores of the women all improve household consumption expenditure of the women. The study also collected data on household assets, access to services and human development. The women small scale Shea butter processors were found to have more of the household assets considered in the study, that is mobile phones, TV and radio than was recorded for the region in GLSS6 except for fridge.

In terms of access to services, access to potable water was found to be better than reported in the GLSS6 with average distance travelled to fetch water especially during the dry season considerably shorter. However, access to improved toilet facilities appeared to be worse among the households of the women Shea butter processors than was reported for the region in the GLSS6. Access to electricity also improved considerably. With respect to human development, overwhelming majority of the women had registered for the NHIS and were more likely to visit a health centre when sick or injured. In terms of education access, NAR and GAR improved significantly at all levels.

Recommendations

Based on the main findings of this study, the study made the following recommendations:

To the NGOs, they should continue to recruit highly qualified human resources and maintain adequate quantity and quality physical resources such as office space, tables and chairs, computers and vehicles because these were found to improve their capability and inure to improve the efficiency of the women Shea butter processors.

With respect to the relevance of their development interventions, the NGOs should do more consultation with their beneficiaries to arrive at the most relevant interventions needed by these beneficiaries. This is based on the finding that suggest that the NGOs only informed the women Shea butter processors of the interventions programs to be made without much say from the women justifying this as donors conditionality on the funds. New development paradigms advocate bottom up approach to development interventions to ensure that the beneficiaries own and support the interventions. They should also encourage the women to take part in their training program and adopt new technologies and innovations in Shea butter processing to improve their technical efficiencies. Furthermore, it is recommended to the NGOs to improve their credibility, transparency and accountability with which they handle funds for development. The findings that over 80% of the NGOs surveyed did not disclose the amount of funding received from different sources in the previous year coupled with fact that about 23% of them did not have their account audited indicate the need for them to be more transparent and accountable to all stakeholders to enhance their credibility. There is wide spread anecdotal evidence suggesting that many NGOs

tend to serve the selfish interest of their executives against the interest of the beneficiaries for which funds were sought and received.

The NGOs should also improve their compliance with regulatory authorities by always renewing their registration and filling necessary reports to the appropriate authorities such as the Registrar General's Department and the District Assemblies. It is not sufficient to make initial registration but to renew such registrations at required intervals.

For the women Shea butter processors, the study recommends to them to continuously avail themselves of training opportunities when available. This is based on the findings that the number of training received is a main determinant of technical efficiency among the women Shea butter processors in the Northern Region. They can therefore improve their technical know-how if they avail themselves of constant training. This study also recommends constant education of the women and their households on the importance of adding toilet facilities to their building. In fact the quality of some of the houses without toilet facilities suggests that the people simply did not attach much importance to it rather than inability to construct it. The people should therefore be educated on the need for toilet facilities in each household to promote good hygiene.

This study makes the following recommendations to the government to improve the Shea industry as a major tool for poverty reduction and economic development:

To put in place regulatory framework to protect the Shea tree and other non-timber forest resources. This is based on the priority concerned raised by the

NGOs that lack of regulatory framework threaten the survival of the Shea tree in particular as people constantly harvest them for firewood and other uses.

Government should subsidize the main inputs in Shea butter processing to enable the women processors acquire these inputs easily to facilitate their activities. These main inputs include electric-powered crushers, milling machines, roaster stoves and efficient energy sources such as LPG. This is based on the finding that the main constraint facing the women Shea butter processors is high costs of the inputs indicated. The high cost of milling was particularly found to have negative effects on the Shea butter output and subsidizing the cost of the milling machine can reduce the cost of milling and overall cost of processing Shea butter.

The women Shea fruits pickers also indicated lack of protective gears against snakes and other reptiles bite as a major challenge confronting them and government should help subsidize them for the women. Access to water should also be extended to areas not yet covered as Shea butter processing consumes large volume of water which is still scarce in some of the communities even though there has been general improvement from what was reported in the GLSS6.

One incidental finding of this study is the high proportion (18.5%) of the households surveyed not paying electricity bills since connected to the national grid for periods ranging from seven months to three years because ECG did not bill them while households that pay bills complained of high tariffs. The study therefore recommends for ECG to promptly collect its bills from all consumers

nationwide that have not been paying bills for one reason or another to ensure fairness to all consumers.

Suggestions for Further Research

This study focused on the technical inefficiency of the women Shea butter processors. Most of women Shea butter processors however emphasized that low market price as a result of pre-financing contract with the buying agents as a main challenge confronting them. Future research should therefore focus on investigating how pre-financing contract affect the pricing mechanism in the industry. Such studies should examine the economic efficiency of the women to give a more comprehensive overlook of the industry.

This study suggests that future research should follow strictly the methods used by GSS by collecting data on household consumption expenditure at regular intervals over a twelve month period to ensure comprehensive capturing of household consumption expenditure. Also, further studies may compare the women small scale Shea butter processors with the SNG affiliate NGOs with other women small scale Shea butter processors to understand the impact of the NGOs' activities on the women. Again, further research may extend beyond the Northern Region to cover the rest of the savannah areas with major Shea butter processing activities.

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APPENDIX A

QUESTIONNAIRE FOR NGOs IN THE SHEA INDUSTRY IN THE NORTHERN REGION

I am a student from the Department of Agricultural Economics and Extension, University of Cape Coast, and as a partial fulfillment of my Doctor of Philosophy Degree in Non-Governmental Organizations Studies and Community Development; I am undertaking a Research on **"NON-GOVERNMETAL ORGANIZATIONS' DEVELOPMENT INTERVENTIONS IN THE SHEA INDUSTRY AND POVERTY OUTCOMES IN THE NORTHERN REGION".** I will be most grateful if you take time out of your busy schedule to complete this questionnaire. Please be assured that any information provided shall be kept confidential. Thanks for your cooperation.

NGO BACKGROUND INFORMATION

NAME/ POSITON OF RESPONDENT.....

TELEPHONE.....

NAME OF COMPANY.....

LOCATION.....

DATE .....

INVOLVEMENT IN THE SHEA INDUSTRY ACTIVITIES

1. Which year was your organization established in Ghana? .....

2. Since when have you been involved with Shea Nut/Butter Processors? .....

3. Does your organization engage in facilitating processing of Shea Nut/Butter?

Yes ☐ No ☐

4. If yes, for how long have you been engaged in facilitating processing of Shea Nut/Butter……..

5. Does your organization engage in facilitating marketing of Shea Butter? Yes ☐

No ☐

6. If yes, for how long have you been engaged in facilitating marketing of Shea Butter……

7. Do you facilitate selling in the local market or international market or both?

……

8. Apart from Shea Butter, do you facilitate marketing of other commodities?

Yes ☐

No ☐

9. If Yes, Mention the other commodities you facilitate marketing?

……

10. For how long have you been engaged in facilitating marketing of the commodities?

11. Does your organization support the Shea butter cooperatives with supply of inputs for Shea butter processing? Yes ☐ No ☐

12. If yes, do you have any formal partnership with any input suppliers last year?

Yes ☐ No ☐

13. Does your organization support the Shea butter cooperatives with marketing/sales of Shea butter products? Yes ☐ No ☐

14. If yes, do you have any formal partnership with any buyers of Shea butter products last year?

Yes ☐ No ☐

15. Did your organization have any engagement with the media last year to promote Shea butter products last year? Yes ☐ No ☐

16. If yes, which media did you have engagement with to promote Shea butter products? .....

17. Did your organization collaborate with other organizations/NGOs to promote Shea butter products last year? Yes ☐ No ☐

18. If yes, which organizations/NGOs did you collaborate with last year to promote Shea butter products? .....

19. Is your organization a member of a local industry association? Yes ☐ No ☐

20. If yes, do you have a certificate of recognition? Yes ☐ No ☐

21. Is your organization a member of an international industry association? Yes ☐ No ☐

22. If yes, do you have a certificate of recognition? Yes ☐ No ☐

GOVERNANCE AND LEGAL COMPLIANCE STRUCTURE

23. Does your organization have a vision statement? Yes ☐ No ☐

24. Does your organization have a strategic plan? Yes ☐ No ☐

25. What is the main driving force behind the establishment of your organization?

.....

26. Does your organization have a board of directors? Yes ☐ No ☐

27. How many times did the board meet last year?

.....

28. Please indicate the dates of the meetings

.....

29. Is your organization registered with the District Assembly where your headquarters is located? Yes ☐ No ☐

30. If yes, did you renew your registration with the District Assembly last year?

Yes ☐ No ☐

31. Is your organization registered with the Registrar General's department? Yes ☐

No ☐

32. If yes, did you renew your registration with the RG's department last year?

Yes ☐ No ☐

33. Does your organization operate bank account with any financial institution?

Yes ☐ No ☐

34. If yes, with which financial institution do you operate the account?

.....

35. Was your financial account audited by an external auditor last year? Yes ☐

No ☐

36. If yes, which auditing firm audited your financial account last year?

.....

OFFICE, EQUIPMENT AND LOGISTICS

37. Please give the total number of employees in the organization last year……

38. How many of the employees have SSSCE or higher?

……

39. How many employees were given training last year?

……

40. Please give 3 areas in which training were given last year

……

……

……

41. Please give the salary range of employees in the organization according to educational levels

1. < SSSCE

……

2. SSSCE

……

3. > SSSCE

……

42. How many employees left the organization for various reasons last year?

……

43. How many rooms are occupied by your organization?

……

44. Do you have a mailing address for your organization? Yes ☐ No ☐

45. If yes, indicate the mailing address

.....

46. Do you have office telephone line for your organization? Yes ☐ No ☐

47. If yes, indicate the office telephone

line.....

48. Do you have fax machine(s)? Yes ☐ No ☐

49. Do you have e-mail address(es)? Yes ☐ No ☐

50. How many tables and chairs are available in your offices?

.....

51. How many computers does your organization have?

.....

52. How many file cabinets does your organization have?

.....

53. How many fans are available in your offices?

.....

54. How many air conditioners are available in your offices?

.....

55. How many vehicles do you have in your organization?

.....

56. How many motorbikes do you have in your organization?

.....

57. How many bicycles do you have in your organization?

.....

FINANCES

58. How many proposals for funding did you submit to local donor agencies last year? .....

59. How many of the proposals yielded positive results in terms of funding?

.....

60. How many proposals for funding did you submit to international donor agencies last year?.....

61. How many of the proposals yielded positive results in terms of funding?

.....

62. What were the sources of financing for your organization last year? Please indicate all that were applicable with the amount of financing from each source:

Self-financing through own business.....

Support from a foundation.....

Founders .....

Beneficiaries/clients of your interventions/services.....

Government.....

Local fund raising.....

International fund raising.....

Others (specify).....

63. What percentage of your funding went into project implementation last year? .....

64. What percentage of your funding went into administrative overheads last year? .....

DEVELOPMENT ACTIVITIES

65. Did your organization provide any services to the Shea butter processor cooperatives last year? Yes

No ☐

66. If yes, how many Shea butter processor cooperatives did you provide service to last year? ...

67. What is the average number of members in the cooperatives you provided services to last year? .....

68. Who or which organization provided funding for the services provided.

Indicate all applicable:

Government

Another NGO

Village savings and loans

The Beneficiaries

Micro/Financial institution/Susu Company

Other (specify).....

69. What types of training did you provide for the Shea butter processors?

Indicate all applicable:

Shea butter processing and quality management

Shea cosmetics formulation

Group dynamic training

Shea business management

Record keeping

Financial and credit management

Marketing

Health and safety

Energy saving

Others (specify)

70. How did you arrive at the types of services you provided for the Shea butter cooperatives?

By informing the beneficiaries the services to be provided

By asking the beneficiaries their needs but still deciding the services

By deciding together with beneficiaries the services to be provided

The beneficiaries deciding the services to be provided by your organization

The beneficiaries taking their own initiatives with assistance from your organization

71. How did you assess the effectiveness of the services you provided for the Shea butter cooperatives in terms of attendance of participants?

Hardly effective ☐

A little effective ☐

Averagely effective ☐

Above average effective ☐

Very effective ☐

72. How did you assess the effectiveness of the services you provided for the Shea butter cooperatives in terms of interest of participants?

Hardly effective ☐

A little effective ☐

Averagely effective ☐

Above average effective ☐

Very effective ☐

73. How did you assess the effectiveness of the services you provided for the Shea butter cooperatives in terms of adoption?

Hardly effective ☐

A little effective ☐

Averagely effective ☐

Above average effective ☐

Very effective ☐

74. How will you rank the cost of implementing the interventions/services you provided for the Shea butter cooperatives?

Very low cost ☐

Low cost ☐

Averagely costly ☐

Highly costly ☐

Very highly costly ☐

75. How will you rank your perceived impact of the interventions/services on the beneficiary members of the Shea butter cooperatives in terms of income?

No impact ☐

Little impact ☐

Average impact ☐

High impact ☐

Very high impact ☐

76. How will you rank your perceived impact of the interventions/services on the beneficiary members of the Shea butter cooperatives in terms of job creation?

No impact ☐

Little impact ☐

Average impact ☐

High impact ☐

Very high impact ☐

77. How will you rank your perceived impact of the interventions/services on the beneficiary members of the Shea butter cooperatives in terms of improved welfare?

No impact ☐

Little impact ☐

Average impact ☐

High impact ☐

Very high impact ☐

78. How do you rank the sustainability of the intervention/services you provided to the Shea butter processors last year in terms of financial sustainability?

Not sustainable ☐

Low sustainability ☐

Averagely sustainable ☐

Highly sustainable ☐

Very highly sustainable ☐

79. How do you rank the sustainability of the intervention/services you provided to the Shea butter processors last year in terms of operational sustainability?

Not sustainable ☐

Low sustainability ☐

Averagely sustainable ☐

Highly sustainable ☐

Very highly sustainable ☐

80. How do you rank the sustainability of the intervention/services you provided to the Shea butter processors last year in terms of environmental sustainability?

Not sustainable ☐

Low sustainability ☐

Averagely sustainable ☐

Highly sustainable ☐

Very highly sustainable ☐

CHALLENGES AND PROSPECTS OF THE SHEA INDUSTRY

81. Please indicate in order of importance 3 challenges you face working with Shea butter cooperatives last year

.....

.....

.....

82. Please indicate 3 areas you will like government policies to focus to improve the performance of the Shea industry in Ghana.

.....

.....

.....

Thank you so much for your cooperation

APPENDIX B

HOUSEHOLD INTERVIEW GUIDE FOR SMALL SCALE SHEA BUTTER PROCESSORS IN THE NORTHERN REGION

I am a student from the Department of Agricultural Economics and Extension, University of Cape Coast, and as a partial fulfillment of my Doctor of Philosophy Degree in Non-Governmental Organizations Studies and Community Development; I am undertaking a Research on **"NON-GOVERNMENTAL ORGANIZATIONS' DEVELOPMENT INTERVETIONS IN THE SHEA INDUSTRY AND POVERTY OUTCOMES IN THE NORTHERN REGION".** I will be most grateful if you take time out of your busy schedule to answer the following questions relating to your production activities and household welfare. Please be assured that any information provided shall be kept confidential. Thanks for your cooperation.

Community **Name:**.....

District.....

QUESTIONNAIRE NO.....

SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. Sex: Male ☐ Female ☐

2. Age: .....

3. Marital status: Married Single ☐ Divorced ☐ Separated ☐

Widowed ☐

4. Educational Status: No Formal Educ. ☐ Prim. ☐ JHS/Mid ☐ SHS ☐

Tertiary ☐

5. What is your relationship with the head of your family?

Wife ☐ Husband ☐ Other (specify)

.....

6. What is the size of your household?

.....

7. How many of your household members fall within the following age ranges?

0 – 14..... 15 – 24..... 25 – 34..... 35 – 44..... 45 – 54..... 55 – 64

..... ≥65.....

HOUSEHOLD LIVELIHOOD ACTIVITIES

8. Do you engage in Shea Butter Processing as a full time occupation? Yes ☐

No ☐

9. If not, which other businesses did you engaged in last year?

.....

10. How many years have you been engaged in the Shea Butter Processing?

.....

11. How do you get the Shea nuts that you use for Shea Butter Processing?

(a) Pick Shea Fruits and Process them into Nuts Myself

(b) Pick some Shea Fruits myself; Buy some more Fruits and processes Shea Nuts myself

(c) Buy Shea Fruits and Process them into Nuts Myself

(d) Buy the Shea Nuts from Producers

(e) Others (specify).....

12. How many times do you process Shea butter per week?

.....

13. How many bags/or kg of Shea nuts do you process per week?

.....

14. How much do you spend on Shea nuts on average per week?

.....

15. What is your output per week in kg?

.....

16. How much revenue do you get from sales of Shea butter on average per week?

.....

17. How much (in GHS) do you spend on average in a week for fire wood?

.....

18. What quantity of water do you use on average in a week for processing Shea butter? .....

19. How much do you spend on average in a week on water for Shea butter processing? .....

20. How much do you spend on average in a week on crushing Shea nuts?

.....

21. How much do you spend on average in a week on milling Shea nuts?

.....

22. How much do you spend on average on containers for packaging Shea butter?

.....

23. How much do you spend in total on material inputs on average per week?

.....

24. How many man-hour of labour is provided by household member on average per week?

25. How many man-hour of labour is provided by paid employee on average per week?

26. Do you have a store room? a. Yes ☐ b. No ☐

27. Which of the following do you use in processing your Shea butter?

a. Crusher ☐ b. Miller ☐ c. Kneader ☐ d. Roaster ☐

e. None of the above ☐

28. How long have you been using this improved technology? (Years).....

29. How did you acquire the technology?

a. Purchase ☐ b. NGOs ☐ c. Financial Institutions ☐

d. Cooperative society ☐ e. other(s) ☐ specify.....

30. What is the advantage of the improved technology to your business over the traditional method?

.....

.....

.....

FUNDING OF PRODUCTION ACTIVITIES

31. Did you apply for any loans for your Shea butter processing last year? Yes ☐ No ☐

32. If yes, from where did you apply for the loan?

.....

33. Was the loan granted to you? Yes ☐ No ☐

34. How much loan was granted to you by the institution/person?

.....

35. Are you satisfied with the amount granted to you? Yes ☐ No ☐

36. How much interest was put on the loan?

.....

37. Are you satisfied with the interest rate charged on the loan? Yes ☐ No ☐

38. What grace period were you given before you commence repaying the loan?

.....

39. What is the repayment period for the loan?.....

40. How much of the loan have you repaid? .....

TRAINING AND DEVELOPMENT

41. Did you receive any training on Shea butter/marketing last year? Yes ☐ No ☐

42. Which organization provided the training?

.....

43. Which organization provided funding for the services/ training? Indicate all applicable:

Government

Another NGO

The Beneficiaries

Micro/Financial institution/Susu Company

Other (specify).....

44. What types of trainings did you receive last year? Indicate all applicable:

Shea butter processing and quality management

Shea cosmetics formulation

Group dynamic training

Shea business management

Record keeping

Financial and credit management

Marketing

Health and safety

Energy saving

Others (specify)

45. How was the type of training provided for you arrive at?

We were informed about the services to be provided

We were asked about our needs but the organization decided on the training

We decided together with the organization on the services to be provided

We decided on the services to be provided by the organization

We took our own initiatives with assistance from the organization

46. How will you assess the effectiveness of the services provided to you by the organization last year in terms of attendance of participants?

Hardly effective ☐

A little effective ☐

Averagely effective ☐

Above average effective ☐

Very effective ☐

47. How will you assess the effectiveness of the services provided to you by the organization last year in terms of interest of participants?

Hardly effective ☐

A little effective ☐

Averagely effective ☐

Above average effective ☐

Very effective ☐

48. How will you assess the effectiveness of the services provided to you by the organization last year in terms of adoption?

Hardly effective ☐

A little effective ☐

Averagely effective ☐

Above average effective ☐

Very effective ☐

49. How will you rank your perceived impact of the interventions/services provided to you by the organization last year in terms of income?

No impact ☐

Little impact ☐

Average impact ☐

High impact ☐

Very high impact ☐

50. How will you rank your perceived impact of the interventions/services provided to you by the organization last year in terms of job creation?

No impact ☐

Little impact ☐

Average impact ☐

High impact ☐

Very high impact ☐

51. How will you rank your perceived impact of the interventions/services provided to you by the organization last year in terms of improved welfare?

No impact ☐

Little impact ☐

Average impact ☐

High impact ☐

Very high impact ☐

52. How will you rank the sustainability of the intervention/services provided to you by the organization last year in terms of financial sustainability?

Not sustainable ☐

Low sustainability ☐

Averagely sustainable ☐

Highly sustainable ☐

Very highly sustainable ☐

53. How will you rank the sustainability of the intervention/services provided to you by the organization last year in terms of operational sustainability?

Not sustainable ☐

Low sustainability ☐

Averagely sustainable ☐

Highly sustainable ☐

Very highly sustainable ☐

54. How will you rank the sustainability of the intervention/services provided to you by the organization last year in terms of environmental sustainability?

Not sustainable ☐

Low sustainability ☐

Averagely sustainable ☐

Highly sustainable ☐

Very highly sustainable ☐

CHALLENGES AND PROSPECTS OF THE SHEA INDUSTRY

55. Please indicate in order of importance 3 challenges you face working as Shea Nut/butter last year

.....

.....

.....

56. Please indicate 3 areas you will like government policies to focus to improve the performance of the Shea industry in Ghana.

.....

.....

.....

HOUSEHOLD CONSUMPTION

57. How much do you spend on food on average per week?

.....

58. How many bags of maize were taken from household farm output for consumption?

59. How much on average did you spend weekly on other food ingredients for own consumption .....

60. Did you receive payment for any work done in form of food this year? Yes ☐ NO ☐

61. If yes, what is the total value of wage received in the form of food this year?

62. Did you send out money to a different household last year? Yes ☐ NO ☐

63. If yes, how much did you send to a different household last year? .....

64. 51. Did you receive money from a different household last year? Yes NO

65. If yes, how much did you receive from a different household last year? .....

66. What quantity of water do you consume on average per week?

.....(litres)

67. What is the main source of water for this household? Pipe borne ☐ bore hole ☐ hand dug well ☐ stream ☐ rain harvest ☐

others (specify) .....

68. How far is this source of water from the household? ..... (km)

69. How much do you spend on water on average per week?

.....

70. Do you own this house in which you dwell? Yes ☐ No ☐

71. If yes, how much do you think the rent will be if you were to rent it?

.....

72. If rented, how much do you pay monthly for the rent?

.....

73. If not rented, how much do you think the rent will be monthly if it were rented? .....

74. What is the main source of energy/lighting for this household? Candle ☐ kerosene lamp ☐ solar energy ☐ national electricity ☐ generator ☐

75. How much on average do you spend on this main source of energy monthly?

.....

76. How much does the household spend monthly on average on personal care products? .....

77. How much does the household spend yearly on average on clothing and footwear? .....

78. How much does the household spend yearly on average on health care?

.....

79. How much does the household spend yearly on average on education?

.....

80. How much does the household spend weekly on average on mobile credits?

.....

81. What type of toilet facility is available for use for this household? KVIP ☐ open latrine ☐ bush ☐ public toilet ☐

others (specify) .....

82. How do you dispose your solid waste in this household? Burning ☐ burying ☐ collected by waste management company ☐ refuse dump ☐

83. How many members of this household attend primary school currently?

.....

84. How far is the closest primary school from this household?

.....(km)

85. How many members of this household attend junior high school currently?

.....

86. How far is the closest junior high school from this household?

..... (km)

87. How many members of this household attend senior high school currently?

.....

88. How far is the closest senior high school from this household? ..... (km)

89. How far is the closest primary health care facility from this household? ..... (km)

90. Please indicate how many of these items you have in your household:

1. Television
2. Radio
3. Fan
4. Fridge
5. Mobile phone
6. Stove