UNIVERSITY OF GHANA

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FARMERS' SOCIO-ECONOMIC PERCEPTIONS ON SHEA TREES: A CASE STUDY IN THE TOLON DISTRICT OF NORTHERN REGION

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THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MA IN DEVELOPMENT STUDIES DEGREE

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DECLARATION

I declare that this Dissertation, except for quotations and references contained in published works which have all been identified and acknowledged, is entirely my own original work and it has not been submitted in part or whole for another degree in the university or elsewhere.

Name of Student:

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Certified by:

Dr. Aba Obrumah Crentsil		15/05/2023
(Supervisor)	Signature	Date

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DEDICATION

I dedicate this piece of work to Almighty Allah for giving me the knowledge, wisdom, and strength throughout my academic journey. I also want to dedicate it to my late uncle Mr. Abdallah Sulemana whose effort brought the family this far. Finally, I dedicate this work to my brother Abubakari Alhassan who has been supportive to keep the family dreams alive.

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ABSTRACT

Vitellaria Paradoxa (Shea tree) is an important economic tree in most parts of the Savannah ecological zones, particularly in Northern Ghana. Due to its enormous contribution to supporting numerous homes in the Northern Savannah belt, the Shea tree, also known as northern "Cocoa," has received substantial local and worldwide prominence in recent times. This is partly due to the increased demand for its final products, such as butter, which has replaced more expensive cocoa products in favour of cheaper alternatives. Among the many socioeconomic advantages of the tree are the fruits, the oil, and the bark. Unfortunately, the same people whose lives are supported by the tree produced also exposed these trees to extensive destruction in the Northern enclave. Shea trees are cut down in Tolon and other rural areas in Northern Ghana to be utilised as fuelwood or for the burning of charcoal during substantial ceremonial gatherings. These attitudes have caused the Shea parklands to be depleted throughout the sub-region, especially in the Savannah belt. Due to the economic, sociocultural, and environmental advantages that the shea tree provides, its significance for household livelihood in the Northern Region cannot be understated, especially for rural women. However, there hasn't been much effort put into understanding how farmers perceive the Shea tree's economic and sociocultural benefits and how that influences farmers' attitudes towards the tree's conservation. The study in filling this gap, used a qualitative design to investigate farmers' perceptions of the socio-economic benefits of Shea trees to determine how that influences their attitudes towards the tree. The results established that the Shea tree has several socio-economic benefits including food, shade, income, medicine, etc. It also revealed that farmers are aware of the benefits of the tree and eager to have conservation measures to protect the tree in the area. The study recommended that the Tolon District Assembly collaborate with the area council to enact and implement appropriate measures to protect the trees for the maximum benefits to be derived by the people in the area. The Area Counsel is perceived to have access to educational and awareness resources, funds, and grants, as well as the authority to enact regulations and enforcements. This study did not address the question of farmers' willingness to engage in extensive Shea tree farming, which is a direction for future research.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The Shea tree is a wild fruit-bearing plant species native to Sudano-Sahelian parklands that plays a significant socio-economic role in Sub-Saharan Africa due to the fruits' commercial and domestic worth (Sanou et al. 2004). Shea tree has gained important recognition in recent times both locally and internationally. This is largely due to the high demand for its end products such as butter, which has developed into a popular substitute for the more expensive cocoa products. The Shea tree is a significant non-timber forest product (NTFP) found primarily in off-reserve forests in certain parts of Africa, including Northern Ghana (Jasaw et al., 2015). Non-timber forest products (NTFPs) have been promoted all over the world to improve local livelihoods while also contributing to environmental sustainability through biodiversity protection and conservation (Ros-Tonen & Wiersum, 2005; Ahenkan & Boon, 2010; Shackleton & Pandey, 2014; Jasaw et al., 2015). NTFPS are important for the food security, health, and social and economic welfare of rural communities (FAO, 2015 and FAO, 1989). For Shackleton & Pandey (2014), NTFPs, such as mushrooms, medicinal plants, wild fruits, honey, and insects, are still the basis for socio-economic sustenance in many developing countries, especially in farming communities. Farmers haul out a variety of NTFPs from forests to consume or generate income (Ahenkan & Boon, 2010). These products include foods, fodder, medicines, spices, construction materials, fuelwood, and utensils.

To get the most out of the Shea tree, the fruits' kernels are frequently processed into butter for value addition, which requires water, fuelwood, and manpower (Jasaw et al. 2015). In the global context, Shea products are recognised as vital products for direct consumption and as raw materials for cosmetic industries. As a result, countries producing Shea earn foreign exchange from it. For example, Shea products such as raw kernels or shea butter are exported to the United Kingdom, Germany, the Netherlands, and Japan to serve the high-value cosmetic industry and a wide range of food production companies, including the chocolate industry (Lovett, 2004; Hatskevich et al. 2011). Shea is projected to worth up to $150M and generate approximately 12% of total household income in the poorest savannah zones (Pouliot, 2012). In West Africa, the United Nations' Food and Agriculture Organization (FAO) has indicated that the Shea industry employs over 3 million women, earns between USD 90 million and USD 200 million in annual exports, and encourages economic activities in localities. Consequently, in Ghana, the Shea industry employs over 600,000 women who are mostly the breadwinners of their families (Awo and Anaman, 2015). The products including shea butter also known as Kpakahili in Dagbani, Nkuto (Akan), or Nku (Ga) aside from serving as a source of income for the women in Ghana, are mostly used for cooking, treatment of wounds, and as a lotion for keeping/moisturizing the skin, especially during the dry and Harmattan seasons (Hatskevich et al. 2011; Adams et al. 2016; Isaac et al. 2021; Ugwu-Dike and Nambudiri 2022).

Yet despite the socio-economic value of the Shea tree, several challenges such as inadequate capital for processing Shea products, biodiversity destruction resulting from Shea tree felling and limited technical know-how have been cited by Adams et al., (2016). According to Jasaw et al. (2015), if more effective and long-term value addition can be achieved for Shea as a significant NTFP for rural households in especially northern Ghana, most of the people will be able to

secure an income beyond their basic needs and create resilience to climate and ecosystem change.

1.2 Statement of the Problem

The Shea tree, often regarded as the northern 'Cocoa' due to its tremendous role in sustaining many households in the Northern Savannah belt, has attracted significant local and international recognition in recent years (Jasaw et al., 2015). This is largely attributable to the high demand for its end products, such as butter, which has become a favoured replacement for the pricier cocoa goods (Jasaw et al., 2015). The fruits it produces, the oil, and the barks among others, serve as socioeconomic benefits of the tree. Regrettably, these wild economic trees have been subjected to widespread deforestation in the Northern enclave by the same people whose lives are influenced by the socio-economic benefits the trees produced. For many rural communities in Northern Ghana, including Tolon, Shea trees are cut down and used for charcoal burning or as fuelwood during bigger ceremonial occasions (Jarawura, 2014). These actions have led to a depletion of the Shea parklands within the sub-region, particularly in Ghana and Burkina Faso (Poudyal, 2009).

Meanwhile, studies conducted in Northern Ghana have paid little attention to farmers' socioeconomic perceptions of the Shea tree, particularly in the Tolon District (Jasaw et al., 2015; Adams et al., 2016; Jasaw et al., 2017; Sikpaam et al., 2019), which may help explain some of the factors influencing Shea tree felling and deforestation in the region. For example, Jasaw et al.'s (2015) study focused on Shea butter processing and resource use by small-scale urban and rural processors. The study of Adams et al. (2016) was also biased towards the general Shea

industry and its contribution to rural livelihoods, particularly women, whilst Sikpaam et al. (2019) limited their study to explaining the prospects and challenges of Shea butter processing in the Tamale Metropolis. Studying farmers' socioeconomic perceptions of the Shea tree in the Tolon District can provide valuable insights into local resource management, social and economic dynamics, and opportunities for sustainable development.

Therefore, it is against this backdrop that this study is conducted to investigate farmers' perceived values of the Shea tree, and how that has influenced their relationship with the Shea trees in three selected communities in the Tolon district of Northern Ghana. Generally, peoples' attitudes to protecting and conserving wild-collected plants such as the Shea tree continue to decline in Northern Ghana. This is particularly important, especially given the rate at which the climate is changing in recent times. The lackadaisical attitude to protect Shea trees could be influenced by the assumption that trees that are grown naturally do not need man's protection, affecting the sustainability and livelihood impacts of Shea trees in the study area. The proximity of the Tolon District to a market centre (Tamale Metropolis) was also a key factor that was considered during the selection of the study area. An assessment of the situation will reveal challenges associated with the management and production of the tree in the area so that measures can be formulated for its efficient management for sustainable development.

1.3 Research Objectives

The main aim of the study is to assess farmers' perception of the Shea tree as a socio-economic tree among three Shea-growing communities in the Tolon District of northern Ghana. The specific objectives are:

1. To examine farmers' perceived socio-economic importance of the Shea tree in the Tolon district of northern Ghana.
2. To assess factors that influence farmers' perception of the Shea tree as a socio-economic tree.
3. To analyse the major challenges faced by farmers and associated opportunities in the production of Shea trees in the Tolon District.

1.4 Research Questions

Broadly, the study seeks to answer the following research questions related to the perception of Shea trees. Three specific questions are as follows:

1. What perceived socioeconomic importance do farmers ascribe to the Shea tree in the Tolon district of northern Ghana?
2. What factors influence farmers' perception of the Shea tree as a socio-economic tree?
3. What major challenges are faced by farmers and opportunities available to farmers in the production of Shea trees in the Tolon District?

1.5 Significance of the Study

The study of farmers' perceptions of Shea trees and how those perceptions influence the conservation and sustainability of Shea trees are considered critical for obvious reasons. First, examining the views/perceptions will provide a solid explanation underpinning farmers' attitudes and knowledge about wild plants, particularly Shea trees. This research can serve as formative

feedback for public sensitization on the best practices (including protection/conservation and replanting) of managing the Shea trees in the Tolon District. Finally, for researchers focusing on environmental management and sustainability of the ecosystem, the study will provide the basis for further research from a broader perspective.

1.6 Scope of the Study

Contextually, the study is focused on the knowledge and perception of farmers regarding the socio-economic and cultural relevance of Shea trees and not the general perceptions of the public on the Shea tree. Geographically, the study will be limited to the Talon district specifically in three selected Shea growing communities namely Wayamba, Kagbal, and Kasulyili within the Northern Region of Ghana and not districts/communities outside of these areas. That notwithstanding, respondents selected to participate in the study shall be between the ages of 18-60 years in Shea growing communities. This is to account for dynamics in the appraisal of the socio-economic and cultural values of the Shea tree.

1.7 Organization of the Study

The entire dissertation report will be organized into five chapters. Chapter one will consist of the introduction, background to the study, problem statement, the study objectives, research questions, scope of the study, and the study organization. Chapter two will include a literature review taking into consideration theoretical and conceptual frameworks. Chapter three will explain the methodology including the research design, sample and sampling procedures, data

collection, and analysis. Chapter four will include data analysis and discussion whilst chapter five will outline the summary of findings, conclusion, and policy recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter highlights the available literature on Shea Trees and the contributions made by different scholars. Background to the Shea tree, socio-economic and cultural values of Shea trees, and farmers' understanding of Shea tree products, are also addressed in this section. The chapter ends with the theoretical perspective and conceptual framework adopted for the study.

2.3 The Shea Tree

The Shea tree (**Plate 2. 1**) is a naturally occurring plant that grows in the Northern Savannah zones of several West African nations, including Ghana, Nigeria, Burkina Faso, and Sudan. It originates from the Sapotaceace plant species (Aleza et al., 2018). The Shea tree is the most dominant plant species across the West African grasslands, which offers crucial commodities and ecological services to the semi-barren lands. There are two core varieties of Shea nuts, the Shea tree produced in West Africa (**Plate 2**) and Vitellaria nilotica grown in Southern Sudan and Northern Uganda (Ferris et al., 2001). The plant is highly resistant to drought and wildfire and often regarded as 'the Miracle Tree' among the Dagomba community because of its multidimensional uses and benefits (Fagan, 2015; Dennie, 2012). Shea tree breeds well in a wide range of soils including extremely destroyed, infertile, semi-arid and stony soils (Hatskevich, Jeníček, et al., 2011; Dogbevi, 2007). The thin epicarp and soft mesocarp that shields the

brownish seed is called the Shea fruit (**Plate 2**) and is made up of 33%-75% of the fruit weight with an average of 55% (Elias et al, 2006) cited in Adeola (2011).

The tree is noted for several benefits including medicinal, food, and cosmetic uses (Maanikuu & Peker, 2017). Traditionally, the tree's primary products have been Shea butter produced from the Shea nut Shea tree bud, roots, and leaves, which are often employed by traditional herbalists to cure a variety of ailments and illnesses (Maanikuu & Peker, 2017). These attributes gained the local nickname 'Miracle Tree' due to their many applications in economic, social, and environmental spheres (Dennie, 2012).

Plate 2. 1: The Shea Tree

Source: Semi-Structured Interviews (April 2022).

In Ghana, the Shea tree grows well in the Northern part of the country which experiences one seasonal rainfall with relatively dryer climatic conditions compared to its Southern counterpart

with a bi-modal rainfall season. Naturally, the Shea growing zone lies in the zone of 600 and 1 400 mm of annual rainfall (DFSC, 2000) cited in (Hatskevich et al., 2011). The Shea tree in Northern Ghana normally grows to an average apex of about 15m and a size of 175cm (Hatskevich et al., 2011). In the Shea industry, Shea production and processing activities are dominated by women in rural areas (Adams et al., 2016; Hatskevich et al., 2011) despite the growing demand for Shea products both locally and globally. In an area where its benefits are well understood, the Shea tree is an essential economic tree that plays a vital role in supporting rural livelihood especially women who have limited access to productive resources (Jamala et al., 2013). Local communities treasure the species for its food, income, and environmental benefits. Through the export of Shea nuts and butter from Africa to Europe, Japan, and other countries, the Shea industry has become a multimillion-dollar sector, making Shea Tree a key resource for Africa (Bonkoungou, 2002). This explains why engagement in Shea nut and related production activities are deemed necessary for the alleviation of poverty in the sub-Saharan Africa region including northern Ghana (Adams et al., 2016).

The Shea industry has experienced tremendous growth in recent times due to its diverse economic and socio-cultural benefits to society. It doubled as raw materials for many industries such as the pharmaceutical and cosmetics companies worldwide (Dennie, 2012). Notwithstanding the medical benefits, Shea also employs rural women in 21 African countries(Global Shea Alliance, n.d.). During the Shea season, women spend an average of 3 hours each day collecting, shelling and sorting nuts (Kent, 2018). The Shea nuts are either sold or processed into Shea butter for consumption and/or sale. This enables the farmers to make money from the activity whilst balancing their nutritional and traditional medical requirements (Maanikuu & Peker, 2017). **Plate 2** below is the Shea tree in its fruiting state.

Plate 2.2: The Shea tree in the fruiting state

Source: (Northernghana.net, 2021)

2.4 Farmers' perception of Shea tree as a Socio-economic tree

The most important and widely known Shea products among farmers in the various societies across the Shea tree growing areas in the world have been identified to include the fruit, nut, kernel and butter, leaves and bucks, and stem (Hatskevich, Jenicek, et al., 2011; Honfo et al., 2012, 2014; Jamala et al., 2013). For Honfo et al. (2012), the Shea tree (Gaertn C. F.) is one of the most valuable trees for farmers. For farmers, it is cocoa. For example, when Shea butter is sold to pharmaceutical companies for the manufacture of ointments and creams, farmers make income (Dennie, 2012). Farmers have also perceived Shea trees to possess medicinal capabilities that traditional herbalists use such as butter, leaves, bucks, etc for the treatment of illness (ibid).

The wood is dense and heavy, making farmers perceive it as ideal for construction projects as well as the manufacture of household and farm items. It's also utilized as firewood, and blacksmiths prize the charcoal it produces for their operations (Schreckenberg, 2004b). Shea trees provide a variety of vital ecological and livelihood services, including food, medicinal, economic, and cultural requirements which farmers perceived as vital for supplementing feeding in the winter season (Boffa et al., 2000; Gwali et al., 2011; Maranz et al., 2004). For example, the ripe mesocarp (fruit pulp) is sugar-rich and a delicacy and is mostly preferred by farmers (Maranz et al., 2004). For some farmers, Shea trees provide shade for them, their crops, herders, and their animals in the hottest portions of the African savannah (Boffa et al., 2000).

2.4 Socio-Economic and cultural values of Shea Tree

Demand for Shea nuts had intensified globally leading to a wide spread of the Shea industry particularly in most African nations (Hatskevich et al., 2011). Ghana over the last few decades has experienced tremendous growth in the industry due to its large parklands that offer a wide range of benefits to the general populace. The Shea fruits serve as an instant food for many rural people while the leaves serve as fodder to both domestic and wild animals (Jasaw et al., 2015). The influence of the Shea tree (typically considered a wild plant) on rural family livelihoods is astounding when climate unpredictability is considered (Hale et al., 2021). These factors have sparked interest (in Shea and associated businesses) among the general public, including the Ghana Cocoa Board, which was formed to govern the country's cocoa and coffee production and export, to include Shea nuts among the country's export commodities (Kwasi, 2020). Shea nuts are presently the country's main non-traditional exports, generating significant cash for the government.

2.4.1 Economic Significance of the Shea Tree

The most important and widely known Shea products in various societies across the Shea tree growing areas in the world have been identified to include the fruit, nut, kernel and butter, leaves and bucks, and the stem (Hatskevich, Jenicek, et al., 2011; Honfo et al., 2012, 2014; Jamala et al., 2013). This was why Honfo et al. (2012) indicated that the Shea tree, Shea tree (Gaertn C. F.), remains one of the most valuable trees for farmers where rural populations rely on Shea products for both food and revenue. Most of the identified products above are used for medicinal purposes. For example, Shea butter is used by pharmaceutical companies for the manufacture of ointments and creams (Dennie, 2012). Traditionally, herbalists also use butter, leaves, and bucks, for the treatment of illness (Ibid). Shea trees also provide a variety of vital ecological and livelihood services, including food, medicinal, economic, and cultural requirements (Boffa et al., 2000; Gwali et al., 2011; Maranz et al., 2004) Shea trees are known for their oil-rich kernels, which are the most valuable part of the tree (Boffa et al., 2000; Maranz et al., 2004). Shea oil1 is used as an illuminant, in soap production, as a hair and skin lotion, and as a medication, in addition to cooking (Boffa et al., 2000; Maranz et al., 2004). Shea butter is a prominent ingredient in commercial skin moisturizers (Kraft & Lynde, 2005) and can be used as a nasal decongestant (Tella, 1979). Shea oil is used to treat wounds and make childbirth easier (Leakey, 1991; Maranz et al., 2004; Moore, 2008). The ripe mesocarp (fruit pulp) is sugar-rich and a nice delicacy (Maranz et al., 2004).

Many countries such as Germany, Netherlands, France, Japan, North America, Demark and Great-Britain are the main importers of Shea nuts (Hatskevich et al., 2011). Due to large

technological and industrial advancements, Shea is now processed into a variety of food products including chocolate, cooking oil and in the cosmetic industry such as soap and medicines. Many industries producing for the global market used a combination of Shea and palm oil. According to (Schreckenberg, 2004), the European Union 2003 recognized Shea butter as one of the six vegetable fats that can serve as a substitute for cocoa butter, highlighting the importance of the Shea tree. The economic importance of Shea trees became widely known in the world due to the unstable prices of cocoa experienced at the international markets in the late 1960s, and thus Shea was regarded as a close substitute for cocoa in the confection and cocoa butter industry (Hatskevich et al., 2011).

Shea tree also has untapped potential to produce large amounts of fluid that can represent an essential cradle of raw material for the gum and rubber industry (Hatskevich et al., 2011). It is acknowledged that the developed nuts contain about 61% edible fat and can be used for medicinal as well as industrial purposes (Betey, 2013). It is projected that about 9.4 million Shea trees are growing in Ghana, and these can hypothetically produce 100 tons of Shea nuts valued at 100 million US dollars per annum (Hatskevich et al., 2011). Aside from carbohydrates, protein, calcium, ascorbic acid, and iron (Soladoye et al., 1989), Shea fruit pulp is also used for its laxative qualities (Maranz et al., 2004). The fat derived from the tree's kernels has a vital role in the local, rural, and national economies of the regions where the tree grows. The main producing countries of Ghana, Benin, Burkina Faso, Togo, Côte d'Ivoire, Mali, and Nigeria produce about 650,000 tons of Shea nuts each year (Honfo et al., 2012).

2.4.2 Social Benefits of Shea Tree

The Shea industry is noted for socially bringing people especially rural women together throughout its production phases. For example, Yayah (2018) noted that Shea butter production is a social activity that involves many people due to its slow process, necessitating the participation of many brains and hands. Shea tree has facilitated group formation and social cohesion among rural folks, particularly women directly involved in the production and processing of the resource (Kanlisi et al., 2014). Additionally, the development of Shea butter producing centres has created an opportunity for women to share ideas about household management, aid each other financially, and expand their companies, and other parts of their lives (Kanlisi et al., 2014). The groups that these women belong, to give them a sense of identity that they are part of a union that is ready to support them achieve their goals. Kanlisi et al. (2014) noted that as part of the social benefits of the Shea tree, people get to build trusted relationships, form and belong to membership groups, create networks with others, and get access to a variety of institutional support. Physically, Shea trees provide shade for crops, farmers, herders and their animals in the hottest portions of the African savannah (Boffa et al., 2000).

2.4.3 Cultural Values of Shea Tree

The state-of-the-art of Shea products (kernels and butter) has been assessed because of increased demand. Because of their socio-cultural and economic importance, Shea trees have been managed and conserved in Africa for over 1,000 years through a form of traditional management and conservation that incorporates a local selection of superior land races (Gwali et al., 2011; Neumann et al., 1998; Wicker, 1998). According to Lovett & Haq (2000), Shea trees are typically found near human settlements and can make up more than 80% of the woody biomass in farmers' fields. The tree's popularity among indigenous peoples stems from its several

applications. The leaves and roots are used for a variety of therapeutic purposes (Boffa et al., 2000). The wood is dense and heavy, making it ideal for construction projects as well as the manufacture of household and farm items. It's also utilized as firewood, and blacksmiths prize the charcoal it produces for their operations (Schreckenberg, 2004b).

In West Africa, archaeobotanical evidence from Saouga village in northern Burkina Faso (Neumann et al., 1998) demonstrates that millet was produced under agroforestry systems that included trees such as Shea tree, Sclerocarya birrea Hochst., Avena sativa Hochst., and Avena sativa Hochst. In addition to presenting evidence of the Shea tree presence at Saouga, the authors (ibid) also offered evidence of Shea tree charcoal remains, showing that individual trees were selected for burning. Culturally, the usage of Shea also dates all the way back to Ancient Egypt, when "know-oil," which Wicker (1998) contends was probably Shea oil, was one of the “seven sacred oils” sought by the ancient Egyptians from Punt for use in beautification, worship, and temple ceremonies. Although the exact location of Punt is unknown, most Egyptologists agree that it spanned the territory between Lake Albert and the “Mountains of the Moon’ in Uganda to the Red Sea areas of present-day Eritrea and Ethiopia (Bradbury, 1988; Glenister, 2008; Smith, 1962; Wicker, 1998). This implies that Shea tree conservation in this area has been practised since the third millennium BC when Punt was first mentioned in Ancient Egyptian records (Glenister, 2008). As a result, it's clear that traditional Shea tree management has a lengthy history. Contemporary farmers save certain trees with desirable traits, such as those utilized in traditional rites such as the Shea tree, and only cut those that are of unfavourable shape, usually the tiniest or unproductive (Boffa et al., 2000; Lovett & Haq, 2000). Shea trees have been protected because of participatory management, which involves a complex mix of traditions and practices. The socio-cultural and economic benefits of the Shea tree can be argued to be the

reason for the conservation of Shea trees in the Shea tree growing areas. Shea trees and oil are used in various cultures for cultural rites such as traditional marriages and weddings (Ferris et al., 2001; Gwali et al., 2011; Hatskevich, Jenicek, et al., 2011).

Cultural taboos related to shea trees vary widely across different regions and ethnic groups in sub-Saharan Africa. Some communities prohibit the harvesting or cutting of shea trees altogether, while others have specific restrictions on when and how the trees can be harvested. These taboos often stem from the belief that shea trees are sacred or have spiritual significance and that their destruction can lead to negative consequences such as drought or famine. Recent research has sought to understand the role of cultural taboos in shaping the use and management of shea trees. For example, a study by Clement et al. (2020) examined the beliefs and practices of shea harvesters in Burkina Faso and found that taboos played an important role in regulating the harvesting and use of shea trees. The authors note that while taboos can limit the use and management of shea trees, they can also serve as a mechanism for promoting sustainable practices and protecting the trees from overharvesting or destruction.

Another study by Ntiamoah et al. (2018) examined the role of cultural taboos in shaping the management of shea trees in Ghana. The authors found that taboos related to the harvesting and cutting of shea trees were widely recognized and respected by shea harvesters and that they played an important role in regulating the use and management of shea trees. The authors suggest that efforts to promote sustainable management of shea trees should take into account these cultural taboos, and work to engage local communities in the management of shea tree resources.

2.4.4 Challenges facing farmers in the Shea tree industry.

The participation of smallholders in the production of Shea-related activities is complicated by the complexities of land tree tenure. The rights to the shea tree and the land on which they grow may be separate (Fortman,1985). For instance, outside of Uganda, Shea tree and land rights are separate yet interwoven, and access to Shea fruit may be available to some extent in bushes and fallows. The fruits of a farm may be split between the landowner and the farmer who hired it, or they may just belong to the landowner. This poses serious challenges to most farmers, especially during the fruiting season when every farmer wants to get a share of the fruits (Okwi, 2019). As a result, new institutional tenure arrangements must be implemented for small-scale farmers to construct Shea tree plantations (ibid).

Despite being considered "vulnerable," the Shea tree is nevertheless used to make charcoal throughout Africa's shea belt. In sub-Saharan Africa, charcoal accounts for a sizeable share of domestic energy use. As the continent's population grows, fuel demand is predicted to surge, placing enormous stress on the tree resources used by the charcoal industry (Okwi, 2019). With regards to Shea processing, farmers are reluctant to produce Shea nuts since the oil extraction process is time-consuming. Three ways are used to make Shea butter, according to Coulibaly et al. (2009): the conventional approach, the mechanical extraction method, and the centrifugation method. Traditional techniques entail gathering nuts from the field, drying them, and then shattering the shells to get the nuts out. After roasting, crushing, and grinding the nuts, water is added. To extract the oil from the leftovers, the acquired paste is heated and churned. After decanting and bailing from the container, oil production is finished. This technique's typical efficiency ranges from 20 to 28%. (Coulibaly et al., 2009).

Theophilus (2018) found that, despite the numerous advantages of the small-scale Shea butter industry both domestically and abroad, processors—who are overwhelmingly women—report low revenues that are comparatively insufficient to cover production costs, let alone generate profits to meet their other needs. This is a worrying development for the rural economy because it is always unattractive to invest in a business that will fail. Unquestionably, the small-scale local shea butter industry in Ghana, for instance, has been recognised as a strategy for reducing poverty and enhancing the way of life (Theophilus, 2018).

Additionally, Okwi (2019) asserts that issues with the marketing of shea tree products are brought on by an over-reliance on traditional production techniques that result in subpar goods Despite having low amounts of capital, many rural processors do not employ upgraded techniques (Okwi, 2019). The existing demand for and financing of nuts, in accordance with the Shea value chain, is another factor contributing to inadequate market access (Ibid). More so, inadequate entrepreneurial abilities and a lack of training for processors are some of the barriers to market entry (Alhassan, 2012). However, processors' "lack of business orientation skills and equipment to supply the commodity which satisfies international standard" is one of the hurdles in raising the Shea value, according to Okwi (2019).

The traditional collection of shea nuts involves manually harvesting the nuts from the ground and cracking them open using stones or other hard objects. This process can lead to hand injuries, such as cuts or bruises, which can become infected and cause long-term health problems. In addition, women who engage in this activity are often exposed to dust and other particulate matter, which can cause respiratory problems and other health issues. The traditional processing of shea nuts involves roasting the nuts over an open flame and then grinding them into a paste,

which is boiled to extract the shea butter. This process lead to exposure to high levels of smoke and other pollutants, which cause respiratory problems and increase the risk of lung cancer.

A study by Schuster et al. (2019) conducted in northern Ghana found that women who engaged in traditional shea nut processing were at increased risk of respiratory problems and lung cancer due to exposure to high levels of smoke and other pollutants. The study also found that women who engaged in this activity were at increased risk of hand injuries and infections due to the manual cracking of shea nuts. Another study by Blaufuss et al. (2021) conducted in Burkina Faso found that women who engaged in traditional shea nut processing were at increased risk of musculoskeletal disorders and hand injuries due to the repetitive and manual nature of the activity. The study also found that exposure to smoke and other pollutants during the processing of shea nuts was associated with an increased risk of respiratory problems and eye irritation.

Efforts are being made to improve the safety and health of women engaged in traditional shea nut processing. For example, the introduction of mechanized processing equipment and the use of protective gear such as gloves and masks can help to reduce the risk of injuries and exposure to pollutants. In addition, community-based programs are being developed to educate women on the risks associated with traditional shea nut processing and to promote safer and healthier practices.

2.5 The Shea Development Strategy

The Shea Development Strategy (SHEDS) 2014-2030 is a comprehensive plan developed by the government of Ghana to promote sustainable development of the Shea industry in the country (Government of Ghana, 2014). This strategy recognizes the important role that the Shea tree

plays in the economy and livelihoods of many rural communities in West Africa, including Ghana. The Shea tree is a valuable natural resource that provides income, food, medicine, and other benefits to local communities. However, the Shea industry is facing various challenges, including low productivity, poor quality, limited access to markets, and unsustainable management practices. To address these challenges, SHEDS was developed with the goal of increasing the productivity and quality of Shea products, improving the livelihoods of Shea producers and processors, and promoting sustainable management of Shea resources. The strategy is composed of six main components that aim to create an enabling environment for the sustainable development of the Shea industry.

The first component of SHEDS is policy and institutional reforms. This component aims to review and reform policies, legal and institutional frameworks to create an enabling environment for the sustainable development of the Shea industry. This includes the development of appropriate policies, laws, and regulations that promote sustainable management practices and the recognition of Shea as an important natural resource that supports rural livelihoods.

The second component of SHEDS is production and productivity enhancement. This component focuses on increasing the quantity and quality of Shea nuts and butter produced in Ghana through the adoption of improved production practices and technologies. This includes the provision of training, extension services, and access to credit to farmers to increase their productivity and the quality of their Shea nuts.

The third component of SHEDS is market development and promotion. This component aims to increase the demand for Shea products in both domestic and international markets by improving the branding, packaging, and marketing of Shea products. This includes the promotion of Shea

products at international trade fairs and the development of a certification system for Shea products to ensure their quality and traceability.

The fourth component of SHEDS is value addition and processing. This component seeks to promote the processing of Shea nuts and butter into higher value-added products, such as cosmetics, pharmaceuticals, and food products. This includes the provision of training and equipment to processors to enable them to add value to their products and increase their income.

The fifth component of SHEDS is research and development. This component aims to promote research and development in the Shea industry to support innovation, quality control, and product development. This includes the establishment of a research fund to support research on Shea and the development of appropriate technologies and innovations to improve the Shea industry.

The sixth and final component of SHEDS is capacity building. This component aims to build the capacity of Shea producers, processors, and other stakeholders in the Shea value chain through training, extension services, and knowledge-sharing. This includes the provision of training to farmers on good agricultural practices, and the provision of business and technical training to processors and other stakeholders in the value chain.

2.6 Policy, Legal and Institutional Framework on Shea

The shea industry is an important source of income for many rural communities in Ghana, particularly in the northern regions of the country. In recent years, there have been efforts to develop policies, legal and institutional frameworks to support the sustainable development of the shea industry. This includes efforts to promote fair trade, increase value-addition and

processing, and improve the livelihoods of shea farmers and processors. In this response, we will explore the policy, legal and institutional framework on shea in Ghana, with a specific focus on the Tolon District.

2.6.1 Policy Framework

Ghana has several policies that relate to the shea industry, including the National Policy on Shea, which was developed in 2018. The policy provides a comprehensive framework for the development of the shea industry in Ghana, with a focus on promoting sustainable production practices, improving the livelihoods of shea farmers and processors, and increasing the value of shea products. The policy also calls for the establishment of a Shea Development Board, which will be responsible for implementing the policy.

Notwithstanding, the Ghana National Forestry Policy of 1994 recognizes the importance of Non-Timber Forest Products (NTFPs), including shea, and emphasizes the need to develop policies and programs to promote their sustainable use and management. The policy also recognizes the role of local communities, particularly women, in the management and utilization of NTFPs. The Ghana Shared Growth and Development Agenda (2010-2013) include a strategy to promote the shea industry by improving the productivity and quality of shea nuts, enhancing the processing capacity of local communities, and developing a sustainable market for shea products.

2.6.2 Legal Framework

The Wildlife Resource Management Act (1992) and the Forest and Wildlife Policy (1994) provide the legal basis for the management and protection of shea trees and the regulation of the harvesting and marketing of shea products. The law requires that permits be obtained for the harvesting and transportation of shea nuts and that the trees not be cut down or destroyed. The

Plant and Fertilizer Act (2010) provides for the regulation of the quality and safety of plant inputs, including shea seedlings.

2.6.3 Institutional Framework

The shea industry in Ghana is supported by several institutions, including the Northern Regional Secretariat of the Ministry of Food and Agriculture, the Ghana Export Promotion Authority, the Forestry Commission, and the Ghana Cocoa Board. These institutions provide support to shea farmers and processors, including training and technical assistance, as well as access to markets. In the Tolon District, there have been efforts to promote the sustainable development of the shea industry. For example, the Tolon District Assembly has established a Shea Butter Processing Centre, which provides training and support to shea processors in the district. The Centre also serves as a market outlet for shea products, helping to increase the incomes of shea farmers and processors.

The Forestry Commission is the government agency responsible for the management and regulation of shea resources in Ghana. The Commission is mandated to develop and implement policies and programs for the sustainable management of all forest resources, including shea. The Shea Unit of the Forestry Commission is responsible for the promotion and development of the shea industry in Ghana. The Unit works with local communities and other stakeholders to improve the productivity and quality of shea nuts, enhance processing capacity, and develop a sustainable market for shea products.

2.6 Theoretical Framework

In this study, the researcher applied the Social Cognitive Theory (SCT) to understand the factors influencing farmers learning behaviour and attitudes towards the sustainability of the Shea tree in the Tolon District. This theory is interested in how people behave, especially how they connect with others to acquire and preserve information, skills, and beliefs/perceptions. Bandura (1989) asserts that SCT explains the reciprocal interactions between (a) personal components, such as thoughts, beliefs, abilities, and attachment, (b) behavioural factors (for instance, farmer learning), and (c) environmental factors (for instance, social influence). Additionally, it emphasizes that a person's perceptions, beliefs, self-confidence, and outcome expectancies govern their capacity to engage in the targeted behaviours (Bandura 1982). The theory also explains that people's ability to interpret a situation, create a reality, and carry out behaviours is significantly influenced by personal characteristics, notably cognitive/perceived beliefs (Anderson et al. 2006). Environmental effects are thought of as things that are physically outside of a person and determine higher accomplishments by providing opportunity and social support (Bandura 1989).

One potential weakness of SCT is that it focuses primarily on individual factors, such as personal beliefs and attitudes, and may not adequately account for social and cultural factors that can shape behaviour. For example, farmers' perceptions of trees may be influenced not only by their personal beliefs about the benefits of trees but also by cultural norms and social pressures related to land use and agricultural practices. Thus, it may be necessary to supplement SCT with other theoretical frameworks that account for these broader social and cultural factors. Another potential weakness of SCT is that it may not fully account for the role of emotions in shaping behaviour. While SCT emphasizes the importance of self-efficacy (i.e., an individual's belief in

their ability to perform a specific behaviour), it may not fully capture the emotional drivers that underlie behaviour. For example, farmers' perceptions of trees may be influenced not only by their beliefs about the benefits of trees but also by their emotional attachment to tree species or landscapes. Despite these potential weaknesses, SCT can still be a useful framework for studying farmers' perceptions of trees. By focusing on key cognitive processes such as self-efficacy, SCT can help researchers understand how farmers' beliefs and attitudes about trees influence their behaviour. Moreover, by emphasizing the importance of observational learning and social modelling, SCT can help researchers understand how social and cultural factors shape farmers' perceptions of trees.

This theory is applied in the study to understand factors influencing farmers' perceptions about Shea tree in the Tolon District. According to the theory, the learner (farmer's) environment includes both the physical environment (such as infrastructure and soils) and the social environment such as family members, farming groups, and the larger community (Slater 1989). The idea of the social environment, which places social pressures on farmers when engaging with other groups can influence their learning and behaviours towards an event (Stephen, 2019). As a result, the current study prefers to focus on the social environment. It has been stated that social influence, whether internal or external, provides social reinforcements in the process of executing and maintaining a learning behaviour within the broad context of the social environment of the Social Cognitive Theory (Naslund et al. 2017; Scullin et al. 2017). Thus, farmers in the Tolon District learn more about the uses of Shea trees through their close associates and are influenced by their peers to safeguard these trees.

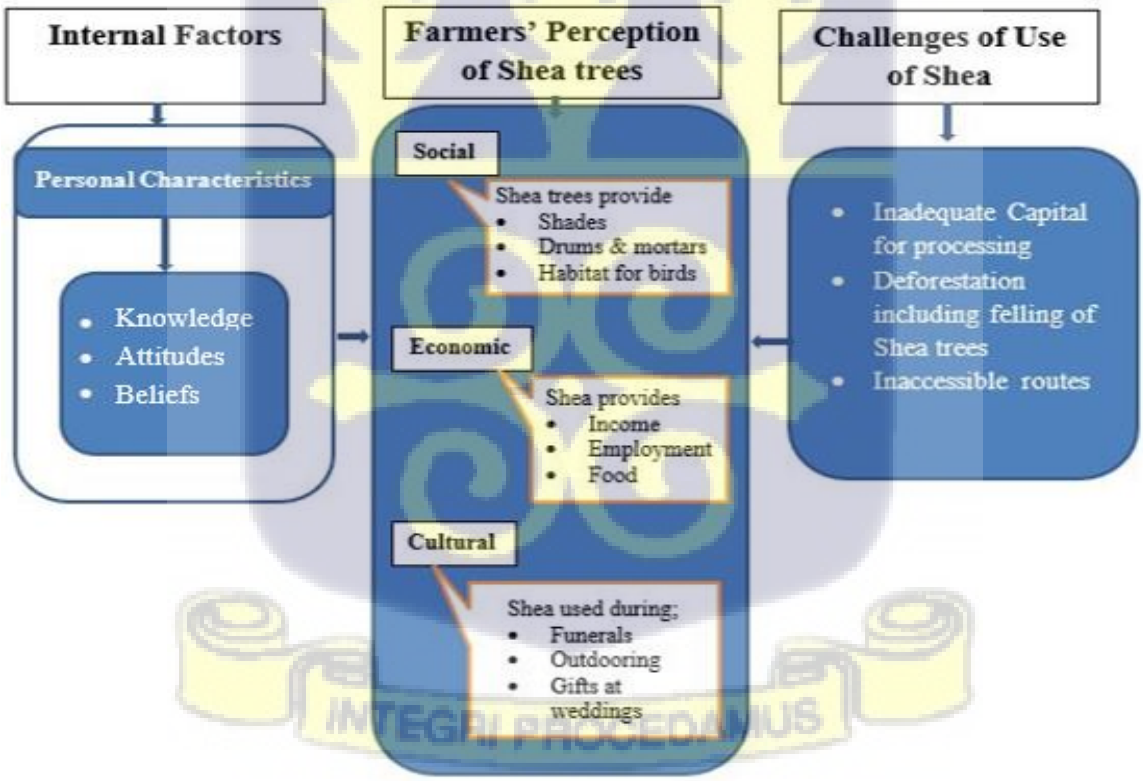
2.7 Conceptual Framework

As noted in the presentation of this chapter, the Shea tree is valued economically, medically, environmentally, and culturally in both Ghanaian and the global livelihood support systems of farmers. This triggered the conservation of this vital resource of the Shea tree. Figure 2.3 below is a presentation of the conceptual framework of the study, indicating the various benefits that the farmer derives from the Shea tree as well as challenges. Internal factors such as knowledge, attitudes and belief influence the perception of farmers on the benefits (economic, social, and cultural) of Shea trees. The challenges hindering the effective harvesting and use of the tree also influence the perception of farmers about the benefits of shea and to either protect and conserve it or neglect and cut it. Meanwhile, the Shea tree is indicated by researchers to be a valuable agroforestry tree that provides food, income through employment, and many other economic benefits. Socio-culturally, it is used in traditional marriages and even funerals, especially in traditional lanterns. The trees also provide shade for crops, farmers, herdsmen etc. and preserve soil moisture for crop growth. The trees further provide barks, roots, leaves, and oil that are often used by herbalists for traditional medications and treatment of wounds. Pharmaceutical companies also use it to manufacture various drugs and ointments. These and other reasons make it necessary for the conservation of the tree for sustainable use especially if the livelihood of the farmer is to be enhanced. Therefore, the Shea tree and its conservation practices by local farmers are necessary for continued dependence on the tree for sustenance.

The Social Cognitive Theory (SCT) can be linked to this conceptual framework of the study of the conservation practices of the Shea tree by local farmers. The SCT posits that individuals' behaviour is influenced by their personal factors, environmental factors, and behaviour factors. In the case of the conservation of the Shea tree, personal factors such as knowledge, attitudes,

and beliefs about the tree can influence a farmer's behaviour towards its conservation. For instance, if a farmer believes that the Shea tree provides significant economic, cultural, and environmental benefits, they may be more inclined to conserve it. Environmental factors such as access to resources, social norms, and community support can also influence a farmer's behaviour towards conservation practices. For example, if a farmer has access to resources such as training and information on the benefits of the Shea tree and conservation practices, they may be more likely to engage in conservation practices. Social norms and community support can also influence a farmer's behaviour towards conservation practices, as their peers' attitudes and behaviours towards the Shea tree can influence their own attitudes and behaviours.

Figure 2.3: The Conceptual Framework



Source: Author's own construct (2022)

2.8 Conclusion

The Shea industry is a very important sector that contributes to the welfare of the rural poor, especially in the northern part of Ghana. The industry provides employment, income, and food to many rural people located in Shea-producing areas of Ghana and other parts of Africa. Farmers have various perceptions about the tree as some refer to it as a magic tree due to its tremendous medicinal benefits. It is also regarded by many as a substitute for cocoa especially the butter it produces, which is very useful for many pharmaceutical companies. In view of these myriad benefits, it is important that researchers determine farmers' perception of the Shea tree as an economic tree and the associated socio-economic and cultural influence on Shea tree conservation especially in northern Ghana where Shea is mostly predominant.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research study and the methodology that was used to collect and analyse data. Moreover, it considers the research design, sources of data, the population of the study, sample size and sampling technique, data instrumentation, as well as data analysis techniques and presentation.

3.3 Research Design

Bless and Higson-Smith (2004) defined research design as a set of procedures that direct the researcher in the procedure of verifying a particular hypothesis and discounting other possible explanations. The two main designs are quantitative and qualitative. Quantitative research design primarily uses numerical assessment in its approach to investigating a phenomenon. However, qualitative methods are focused on the descriptive and explanatory assessment of a situation (Creswell, 2013). This study used a qualitative research design to examine the socio-economic perception of people about the Shea tree and its product. The qualitative design emphasizes meanings, beliefs, and discourses, as opposed to laws and rules, correlations between social categories, or deductive models (Rhodes, 2017). It helped us to understand the underlying opinions and motivations of the problem and provided insight for potential quantitative research.

According to Marriam (2009), the qualitative research design is an umbrella term covering a range of interpretive techniques which seek to describe and translate not the frequency of certain naturally occurring phenomena in the social world but are interested in understanding the

meaning that people have constructed about the world. This research design falls within the interpretive ontological paradigm and holds the view that reality does not exist without knowing it, thus, the reality is best understood by how people interpret their experience in terms of social life in the world (Creswell, 2013). The qualitative research design is adopted for the study because; of the deeper understanding of the subject under study it offers. Furthermore, the approach allows the understanding of social phenomena through the interpretation of the respondents (Bryman, 2012).

3.4 Population of Study

According to Simmons et al. (2009), research population studies a group of individuals who are part of a general population but have similar qualities including age and sex. The source of the population is people, individuals, animals, countries, and objects. According to Creswell (2009), the population comes in two types, which are targeted and accessible. The targeted are the ones the researcher is interested in generalizing the conclusion to, and the accessible is the population that the study draws samples. Therefore, the population for this research referred to the category of people from whom the data is collected. They included: District Ministry of Food and Agriculture-MoFA officials, Chiefs/opinion leaders of the selected communities, shea collectors, and other stakeholders relevant to the value chain in the Wayamba, Kagbal and Kasulyili communities.

3.4.1The Study District Profile

3.4.2 Location, Vegetation, Population Size, Structure and Composition

Tolon District was curved out in 2012 from the then Tolon-Kumbungu district. The district lies between latitudes 9° 15′ and 10°0 02` North and Longitudes 0° 53′ and 1° 25′ West. It shares boundaries to the North with Kumbungu, North Gonja to the West, Central Gonja to the South, and Sagnarigu Districts to the East(Ghana Statistical Service 2014, 2014). The district has a single rainfall season which normally starts in April and increases steadily to its peak in August-July and then starts to decline and finally stops around October –November. The core vegetation is grassland, commingled with guinea savannah woodland, branded by drought-resistant trees such as acacia, (*Acacia longifolia*), mango (*Mangifera*), baobab (*Adansonia digitata* Linn), shea nut (*Shea tree), dawadawa, and neem (Azadirachta indica).* The most important tree species include the Shea nut, dawadawa, and mango, which are commercial trees and form an essential part of the livelihood of its people. There is also the Neem tree which mostly has some medicinal use. The district has a total population of 72,990 representing 2.9% of the region's population according to the 2010 population and housing census 2014 report by the Ghana statistical service. Males constitute 49.8% whiles females represent 50.2% and almost 90% of the district population is rural (Ghana Statistical Service 2014, 2014).

3.4.3 Agriculture

According to the 2014 District Analytical report of the Ghana Statistical Service, almost 93% of the district's population are farmers of which 92% constitute crop farmers. Livestock rearing including cattle, goats, and sheep account for 74.1% whiles 0.7% of the district population is engaged in tree planting. In addition to agriculture, the Tolon district is also known for its Shea

nut processing activities. Shea nuts are harvested from the Shea tree, which is native to West Africa, and the nuts are processed to extract Shea butter, which is used in cosmetics, soaps, and other products. The Shea nut processing activities in the Tolon district provide employment and income for many people, particularly women, who are often involved in the collection, cracking, and processing of nuts. The district has several Shea butter processing centres and cooperatives, which provide training and support for local producers.

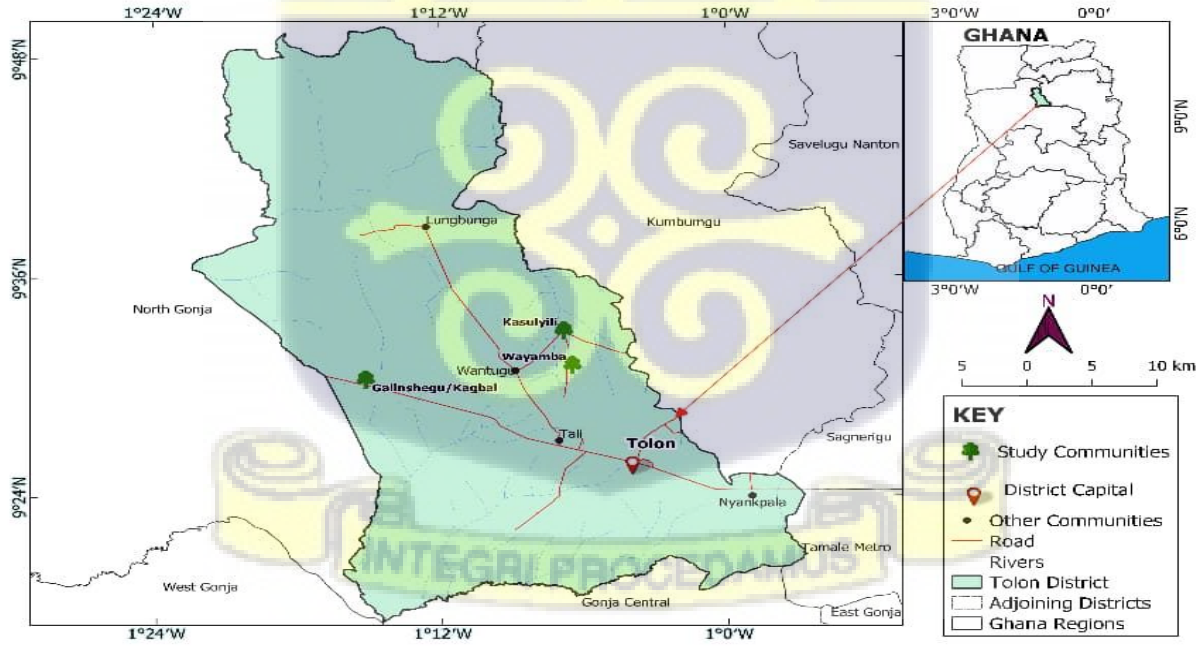
3.4.4 Study communities

Wayamba, Kasulyili and Kagbal are all rural communities located in the East, West and South of the Tolon district respectively. These communities just like other Northern communities have two systems of governance. Namely, the modern administrative governance system draws its powers from the Local Governance Act 2016(Act 936) and the local or traditional authority presided by the various chiefs and their elders. Peasant/subsistence agriculture is the economic backbone of the communities, with indigenous people (mainly Dagombas) accounting for most of the population and a Muslim majority.

The communities are known for their involvement in Shea nut processing activities, which provide an important source of income for many households in the area. In Wayamba, Shea nut processing activities are organized through a cooperative system. The Wayamba Shea Butter Cooperative is a group of women who come together to collect, crack, and process Shea nuts into Shea butter. The cooperative provides training and support to its members, helping to improve the quality of the Shea butter produced and increasing their access to markets. Kasuliyili is another community in the Tolon district that is involved in Shea nut processing activities. The

Kasuliyili Shea Butter Association is a group of women who come together to collect and process Shea nuts into Shea butter. The association works to improve the livelihoods of its members by providing training and support, and by advocating for better prices for their Shea butter in the marketplace. Kagbal/Galinshegu is a community in the Tolon district that has several Shea butter processing centres. These centres provide employment opportunities for many people in the community, particularly women, who are often involved in the collection, cracking, and processing of nuts. The centres also provide training and support for local producers, helping to improve the quality of the Shea butter produced and increasing their access to markets. The researcher purposively selected these communities because of the predominant nature of agricultural activities including Shea production and processing in the area and the diversity of economic activities among these communities.

Figure 3.1: District Map Showing Research Communities



Source: Source: Author's construct 2022.

3.5 Sample and Sampling Technique

Bhattacherjee (2012) defines sampling as a statistical process of selecting a subset (called a sample) from a population of interest for the purpose of making observations and inferences. The study used the convenience sampling technique to select the respondents. Convenience sampling is a non-probability sampling technique where subjects are selected based on their accessibility and proximity (Saunders, Lewis, and Thornhill, 2012). Convenience sampling was chosen for the study because, according to Wendy et al. (2018), it allows the researchers to obtain basic data and trends regarding the study without the complications of using a randomized sample. This method is also extremely speedy and easy causing it to be an attractive option to most researchers (Gary, 1990). However, despite its advantages, according to Bornstein et al. (2017), the convenience sampling technique is characterized by insufficient power to identify differences in population subgroups.

Based on the population size of the communities, a total of Forty-five (45) respondents comprised Shea collectors and processors across the three communities for the in-depth interview. A total of 27 participants were engaged in the focus group discussions with nine (9) participants for each group, four (4) key informants interviews covering 3 opinion leaders across the three (3) communities and an official from the District Department of Agriculture. Below **Table 3.1** shows the presentation of the sample distribution. In general, the snow balling technique was employed for the recruitment of the participants. The researcher asked participants to refer other potential participants to respond to the questions of the study.

Table 3.1: Sample distribution

Community	Sample size		
	Semi-Structured Interviews	**Focus Group discussions**	**Key-Informant Interviews**
Kasulyili	20	9	1
Wayamba	15	9	1
Kagbal/Galinshegu	10	9	1
Agric Officer	-	-	1
Total	**45**	**27**	**4**

Source: (Tolon District Assembly, 2022)

3.6 Sources of Data

Both primary and secondary sources of data were used for the study. Primary Data is data created by the researcher through surveys, interviews, observations, questionnaires, experiments etc. especially collected to comprehend and address the current study issue (Hox and Boeije, 2005). Secondary data on the other hand entails utilizing data/information that has already been produced by government agencies, healthcare facilities, etc. as part of organizational record keeping which is then retrieved from a wider range of data files including government publications, websites, books, journal articles, internal records (Hox and Boeije, 2005). The primary data source was obtained from the field through semi-structured interviews and focus group discussions. Each interview session was tape-recorded and supplemented with notes-taking. Bryman (2012) suggests that interviews be tape-recorded so that the interviewer can be attentive to the interviewee, follow important points and ask probing questions where necessary.

The secondary source of data was also collected from appropriate data sources including books, journals, oral narratives, and activities both published and unpublished.

3.7 Data Collection Methods

The study employed semi-structured interviews, Focus Group Discussion (FGD) and Key-Informant interviews to collect primary data directly from the field.

3.7.1 Semi-Structured Interviews

Semi-structured interviews work in the same way much like verbalized questionnaires. In structured interviews, the researcher can ask open-ended questions and follow the responses where they take them using a semi-structured framework (Creswell, 2013). The responses offer a thorough understanding of each person's experiences, which are compared to those of the other study participants. During the interview, the questions were not changed, and no additional inquiries were made to elicit a justification for a given response. Because there is essentially no risk that the interviewer or the subject would stray from the subject, these interviews can be completed quickly. The regularity of the questions posed makes it simple to compare and analyse the results. The study used a semi-structured approach to collect a mixture of objective and narrative explanations from the respondents.

3.7.2 Focus Group Discussion (FGD)

Focus group discussions (FGDs) are a quick evaluation, semi-structured data collection technique in which a purposefully chosen group of participants come together to deliberate about topics and concerns based on a list of main themes created by the researcher/facilitator (Kumar

1987). It also a common qualitative strategy for developing a thorough grasp of social issues is focus group discussion (Nymba et al. 2018). Instead of using a statistically representative sample of a larger population, the strategy seeks to collect data from a deliberately chosen group of people. Here in the study, the researcher employed a mixture of males and females within the age groups of 20-65 for the discussion which lasted for about one and a half hours (1:30mins). The researcher used a tape recorder to record the responses of respondents which was later transcribed for onward analysis. The researcher used the FGDs guide to collect data from respondents in various communities.

3.7.3 Key- Informant Interviews

Simply said, key informant interviews entail speaking with a small group of people who are most likely to have the knowledge, suggestions, and insights needed on a certain subject (Kumar 1989). In this interview, the informants are chosen because the investigator feels they can provide information or ideas appropriate to the purpose of the study (Kumar, 1989). Interview guides are used to conduct them, and they include a list of the topic areas and concerns that will be discussed. In the process of interviews, the interviewer constructs the real questions. These interviews are conducted in an informal setting that feels like a conversation between friends. To obtain more information, the interviewer gently probes the informants while taking detailed notes that are later developed. The interviewer returns to the main informant if all pertinent topics are not covered in one session. The interviews' unstructured form gives them specific meaning and relevance in the current discussion (Kumar 1989). This study used a key-informant interview guide to collect data from leaders of the various communities in the study.

3.8 Data Reliability and Validity

Reliability refers to the repeatability of findings. Data is reliable when it is sufficiently complete and error-free to be convincing for its purpose and context (Akomea, 2017). According to Neuman (2003), reliability refers to the dependability of the research findings and their processes. Bhattacherjee (2012) defined validity as the extent to which a measure adequately represents the underlying construct that it is supposed to measure. This means validity is all about the truthfulness of the findings.

3.9 Data Analysis and Interpretation

The primary data obtained by means of interviews were analysed qualitatively using the thematic analytical technique. According to Javadi and Zarea (2016), thematic qualitative analysis is useful for detecting, analysing, and reporting themes in qualitative data. The data from structured interviews is, therefore, transcribed and narrated within the thematic context with central themes linking the objectives of the study. According to Goodwin (2010), qualitative results are presented not in terms of statistical calculations, but as analytical narratives that summarize the researcher's main outcomes. The themes derived from the study objectives include farmers' perceived socio-economic importance of the Shea tree in the Tolon district of Northern Ghana, assess factors that influence farmers' perception of the Shea tree as a socio-economic tree and analyse of the major challenges faced by farmers and associated opportunities in the production of Shea tree in the Tolon District. These were the themes alongside the structured, FGDs and key informant interviews that were analysed.

3.10 Ethical Consideration

An introductory letter was obtained from ISSER and presented to the appropriate authorities in the communities for permission to be granted before the data collected started. Respondents were guaranteed that the information would remain anonymous and would be treated with the utmost confidentiality. The purpose of the study was also fully explained to the respondents, which enabled them to make judgments about their participation in the study. According to the ethical guidelines of the Social Research Association (SRA), a researcher has the duty to protect subjects from undue harm that might arise because of their participation in a study (SRA., 2003). all these ethical procedures were followed during the data collection and presentation of the findings.

3.11 Limitation of the study

The limitation of a research study are the obstacles that obscure extensive and effective conduct of the study and require the researcher to compromise certain aspects of the study. The limitations of this study were the duration and financial resources required to undertake an extensive study. This influenced the researcher to adopt a more qualitative approach for conducting this study, posing a great challenge in generalising the findings.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION

4.0 Introduction

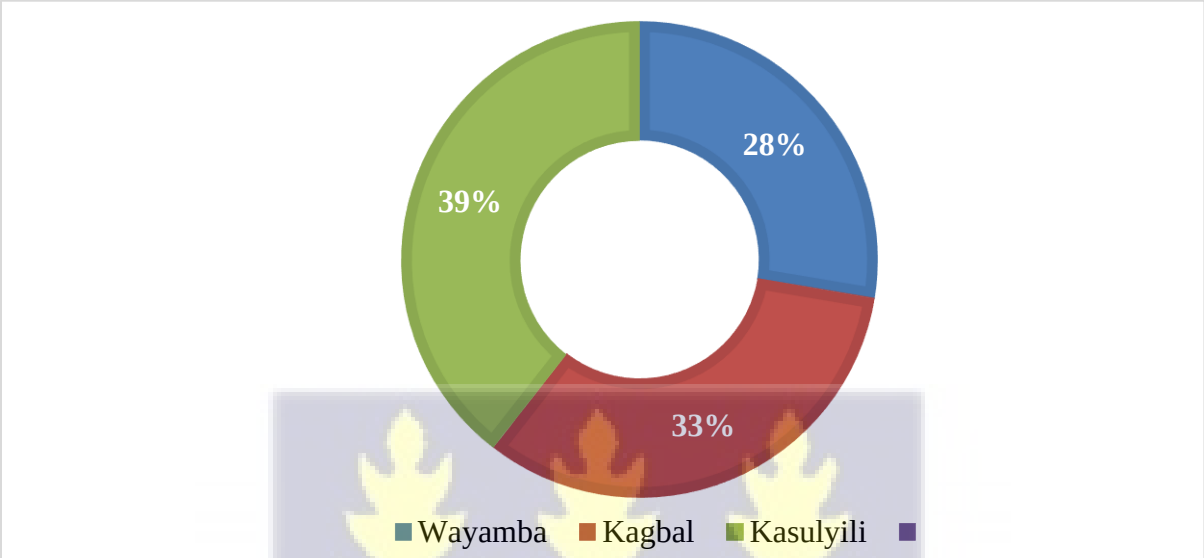
This chapter entails the presentation of results and discussion of the data collected from the field on farmers' socio-economic perceptions of shea trees in the Tolon District of the Northern Region of Ghana. The presentation of the results is split into two parts. The first part deals with the demographic background of the respondents whilst results relating to the research objectives are presented in the second part. The results are primarily summarised using tables, graphs, and statements made by respondents in the field. The analysis and discussion of the results are done on key themes formulated from the objectives of the study. These themes include the socio-demographic characteristics of respondents, farmers' socio-economic perception of the Shea tree, factors influencing farmers' perception of the Shea tree as a socio-economic tree, and the challenges faced by farmers and associated opportunities in the production of the Shea tree.

4.1 Socio-Demographic Characteristics of Respondents

The data on socio-demographic features collected include community, sex, age and educational level of respondents. A total of 45 respondents engaging in the activities of Shea tree including shea nut collectors, key-informant and processors formed the study respondents. In the study, the respondents were assessed based on the community they live in at the time of this survey. From the survey, it was revealed that 39% of the respondents lived in Kasulyili, 33% lived in Kagbal

and 28% lived in Wayamba. **Figure 4.1** is a presentation of the results on the community of respondents.

Figure 4. 1 Community of respondents

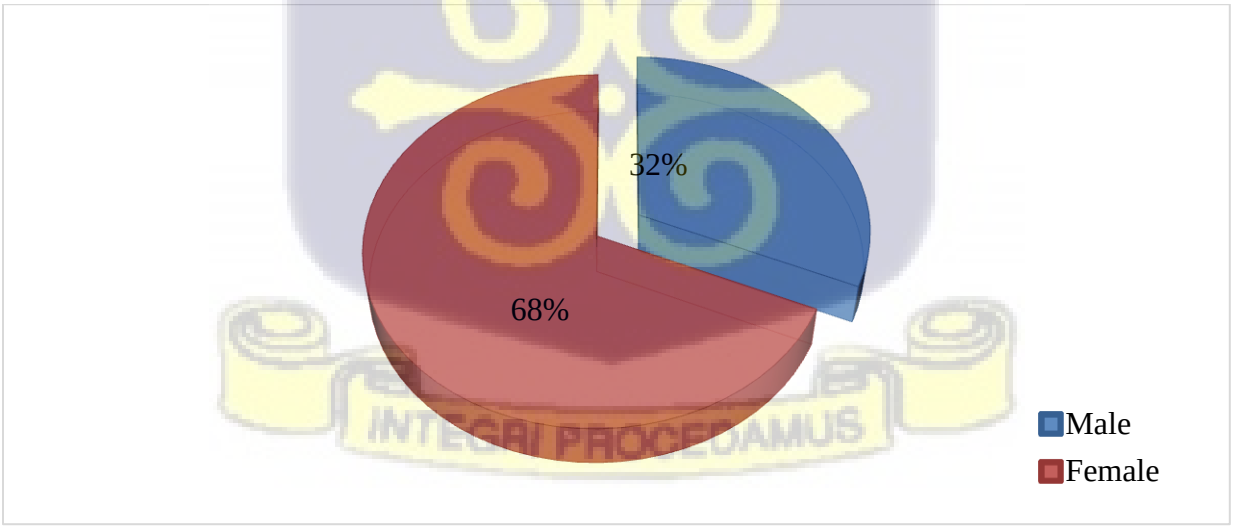


Source: Semi-Structured Interviews (April 2022)

With respect to the sex of the respondents, a majority (68%) were females, with 32% of the respondents being males. These results are presented in Generally**,** in the Shea growing zones, women are more engaged in the Shea collection than men (Adams et al., 2016). Shea-related tasks are said to be carried out by 16 million women, half of whom live in West Africa (GSA, 2020). According to the Global Shea Alliance's report (GSA, 2020), 4 million women are active in the export value chain, with 200 million dollars in revenue created annually in communities that manufacture shea tree commodities. The GSA notes that women collect Shea nuts, part of which is sold as kernels to intermediaries and the other part utilized for indigenous butter production for local markets. When the women harvest the nuts from the field, they are stored for subsequent processing in dry locations (usually small huts built as storage).

Figure 4. 2 This significant disparity could be said to have resulted from the fact that activities relating to the Shea tree are dominated by women, particularly in the study. The correlates with the findings of several researchers' findings including Adams et al. (2016) and Hatskevich et al. (2011) indicated that women are the dominant group engaging in Shea tree-related activities. Generally, in the Shea growing zones, women are more engaged in the Shea collection than men (Adams et al., 2016). Shea-related tasks are said to be carried out by 16 million women, half of whom live in West Africa (GSA, 2020). According to the Global Shea Alliance's report (GSA, 2020), 4 million women are active in the export value chain, with 200 million dollars in revenue created annually in communities that manufacture shea tree commodities. The GSA notes that women collect Shea nuts, part of which is sold as kernels to intermediaries and the other part utilized for indigenous butter production for local markets. When the women harvest the nuts from the field, they are stored for subsequent processing in dry locations (usually small huts built as storage).

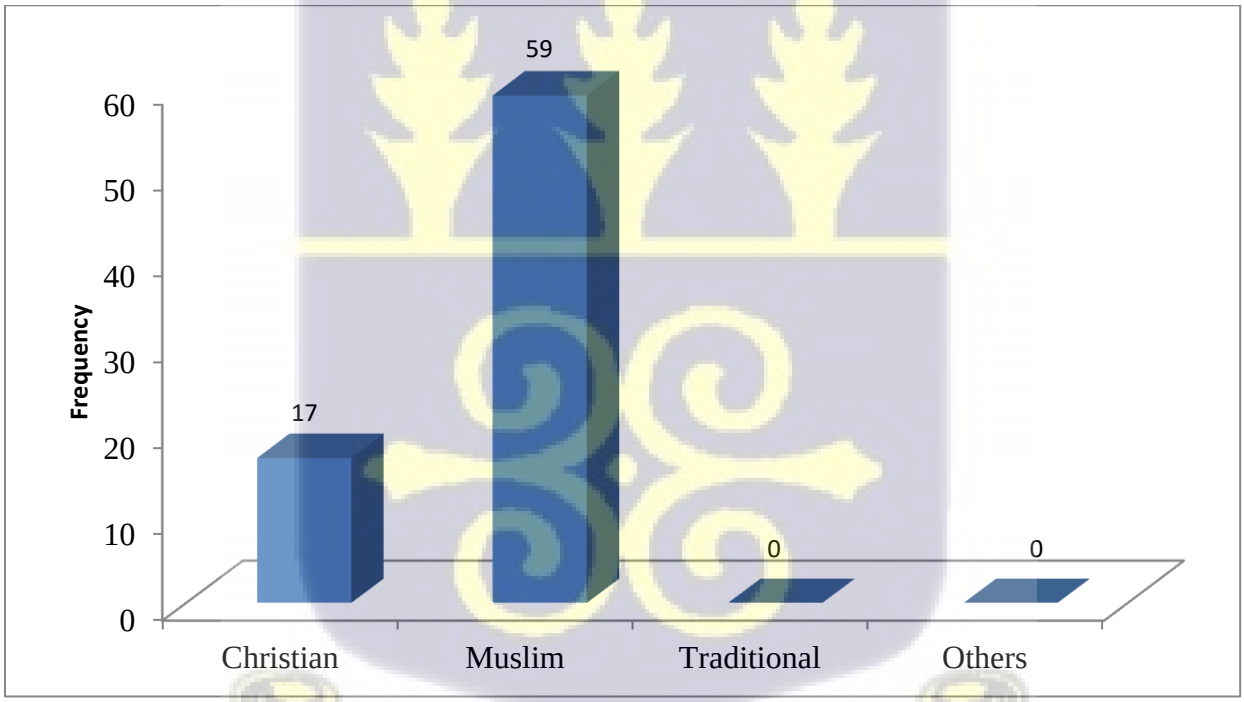
Figure 4. 2 Sex dynamics of respondents



Source: Semi-Structured Interviews (April 2022)

Regarding the religion of the respondents, the majority (59) corresponding to 77.6% of the respondents in the study area are Muslims whilst 17 (22.3%) of them are Christians. Traditional believers in the study area had no response which could be associated with the predominant nature of the Islamic religion in the area. **Figure 4. 3** presents the data on the religion of respondents obtained from the field. This confirms the findings of the Ghana Statistical Service District Analytical Report of the Tolon District in 2014, that majority of people in the Tolon District were Muslims. This could result in variations in the use and perception of the values and benefits of Shea trees in the study area.

Figure 4. 3 Religion of respondent

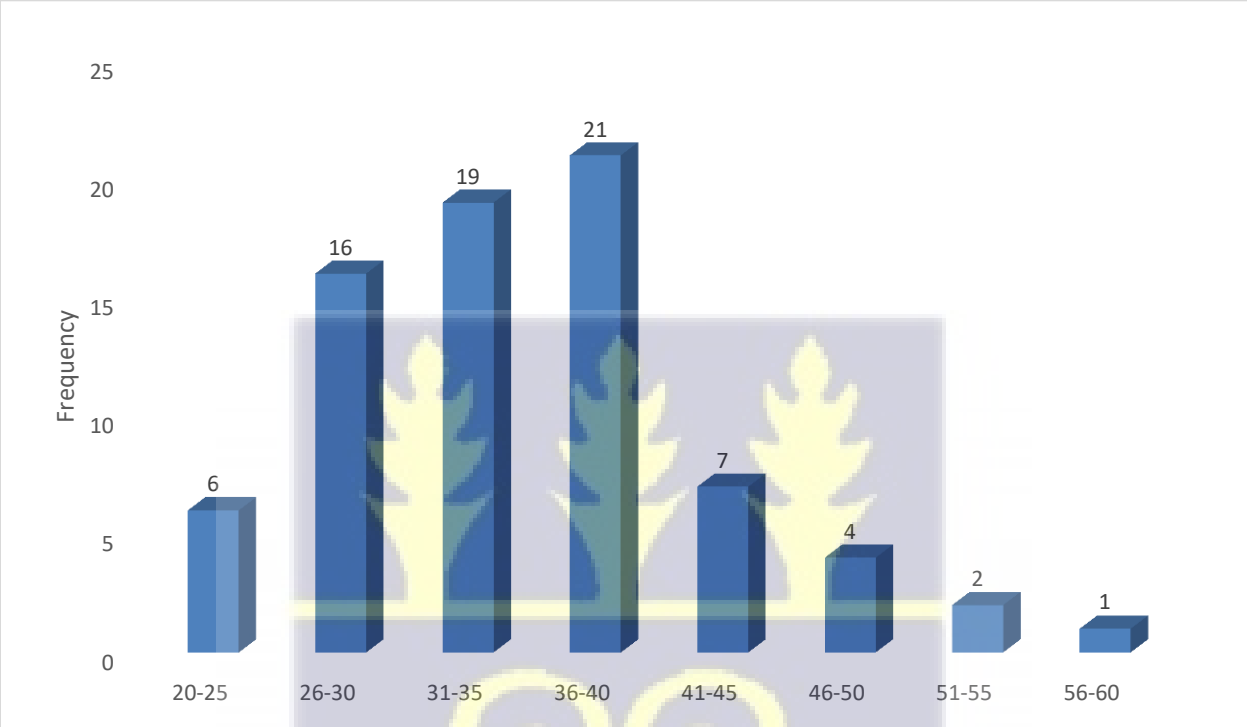


Source: Semi-Structured Interviews (April 2022)

The age characteristics of the respondents in the study area ranged from 20 to 60 years as shown in **Figure 4. 4**. From this, majority of the respondents were within the age groups of 26-30, 31-

35, and 36-40 with the highest age group being 36-40. The findings also confirm the same report of the GSS (2014) that majority of the people in the district are between the ages of 20-45 years. This implies that the Shea tree serves as an important source of employment for the youth.

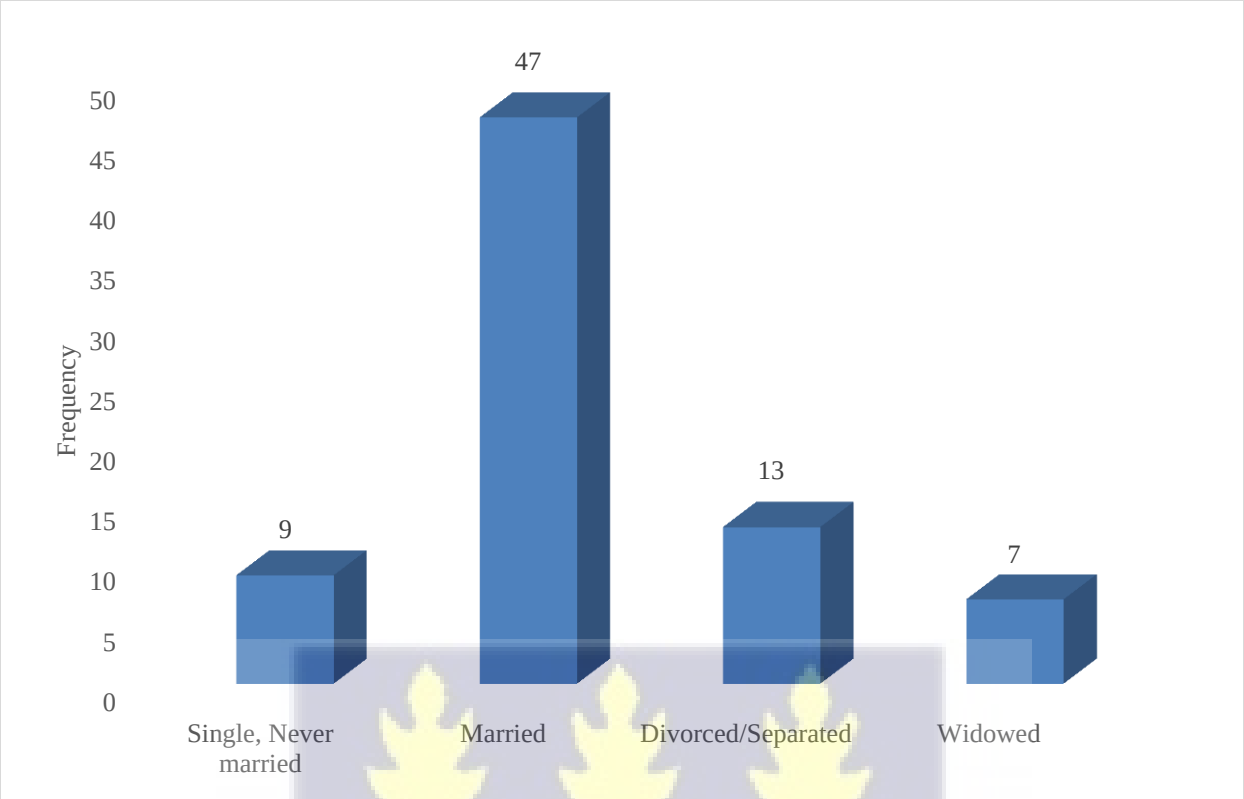
Figure 4. 4 Age of Respondents



Source: Semi-Structured Interviews (April 2022)

The marital status of the respondents was also explored. As shown in **Figure 4. 5**, most of the respondents (47) in the study, were married at the time of the survey. 13 of the respondents were divorced /separated with 7 being widowed. Only 9 of the respondents in the study had never been married. The findings corroborate the report of the GSS (2014) that most of the residents in the Tolon District were married.

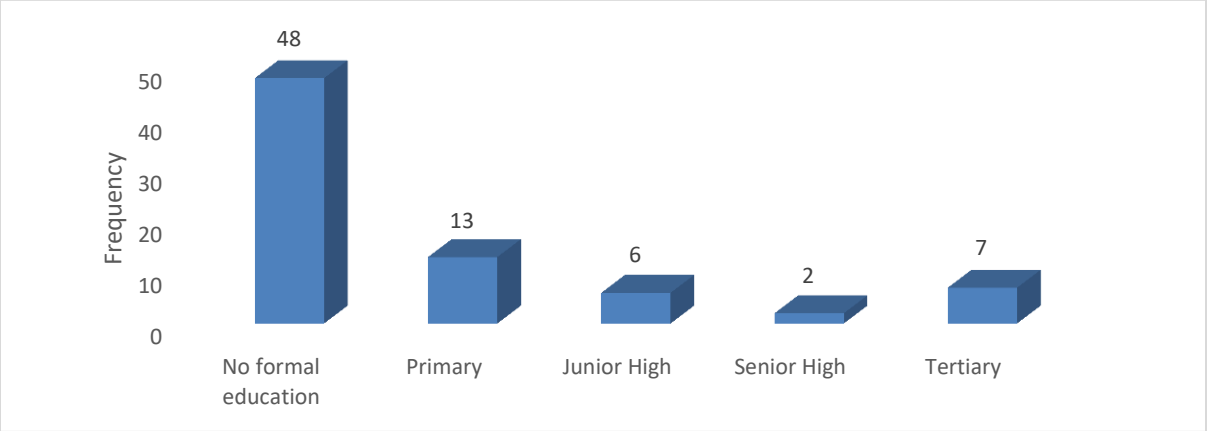
Figure 4. 5 Marital status of the respondents



Source: Semi-Structured Interviews (April 2022)

With respect to the educational levels, 48 respondents had no formal education as illustrated in **Figure 4. 6**. 13 of the participants had primary education, 7 had tertiary education, 6 had Junior High School education and only 2 had Senior High School education. This could be a result of the high rate of illiteracy in the area. This could further be justified be the fact that most of the farmers engaging in Shea activities are illiterate women (Adams et al., 2016). This finding is validated by the report of the GSS (2014) which found that most of the people in the area have no formal education.

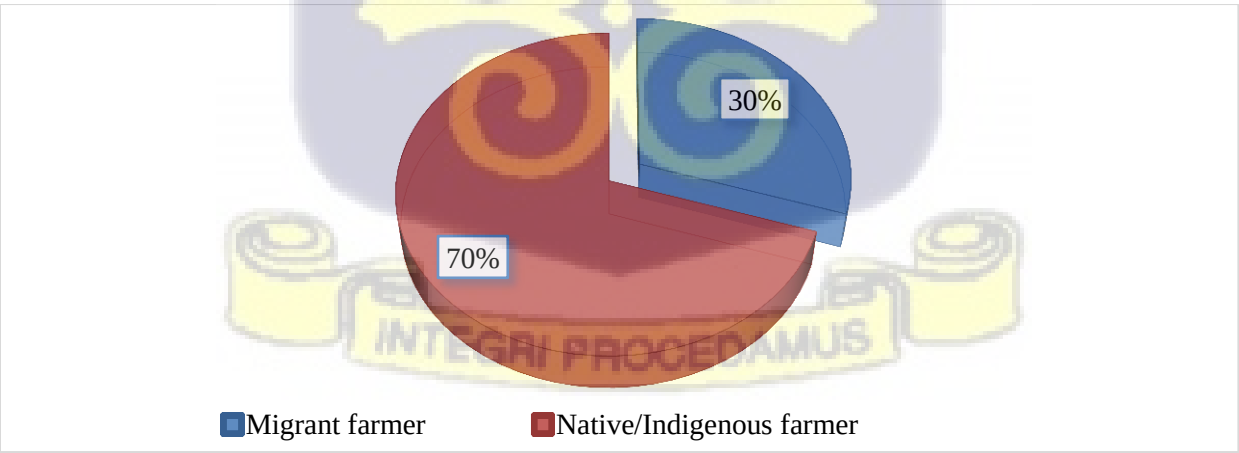
Figure 4. 6 Education levels of respondent



Source: Semi-Structured Interviews (April 2022)

In the study area, majority (about 70%) of the farmers who responded to the questionnaire were native/indigenous farmers in the district whilst 30% of them were migrant farmers from other districts. This is shown in **Figure 4. 7** below. The underlying reason for this could be attributed to the nature and history behind the formation of those communities. Most of the people in the area are indigenes (usually clans and lineages) and mostly live on family lands (Lentz, 2006)

Figure 4. 7 Originally from the district



Source: Semi-Structured Interviews (April 2022)

Of the key informants, 3 of the 4 were males while one of them was a female. The female respondent resided in Kagbal, whilst two of the males lived in Kasulyili and Wayamba. The agriculture officer was based in Tolon. Except for the Agriculture Officer, all the key informants were farmers and opinion leaders in their respective communities. In the subsequent presentation of the chapter, the researcher presented the results based on the 45 respondents, complemented by the FGDs and the Key Informant Interviews.

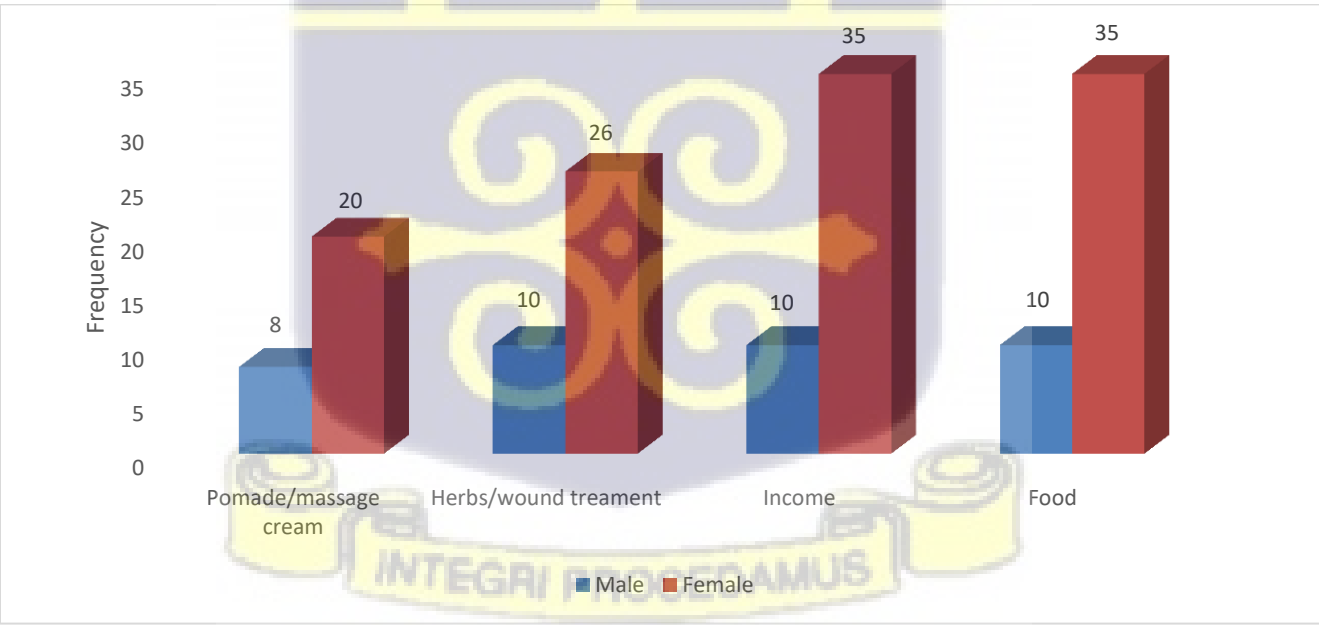
4.2 Respondents' general perceived importance of the Shea tree

In the study, 35 female respondents perceive Shea trees as a source of food and income whilst 36 making up of 26 females and 10 males of the respondents perceive it as important for medicinal purposes including herbs and wound treatment. 28 of the respondents also indicated they use Shea as a pomade or massage cream. The findings are consistent with the study by Dennie (2012) and Jamala et al. (2013). The findings of the study are consistent with the multiple uses of Shea trees that have been documented in the literature. According to Akpapunam et al. (2021), the Shea tree has multiple uses, including food, medicine, and cosmetics. The study further notes that Shea butter is used as an edible oil and in the production of confectionery and that the oil is also used in the pharmaceutical and cosmetic industries. This is consistent with the perception of the female respondents in the study, who saw Shea trees as a source of food and income.

In addition to food and income, the study also found that respondents perceived Shea trees as important for medicinal purposes. This is supported by the study by Njoku et al. (2021), which identified the use of Shea butter in traditional medicine for the treatment of various ailments, including wounds, skin diseases, and respiratory problems. The study further notes that Shea

butter has anti-inflammatory and antimicrobial properties, which make it effective in wound healing and the treatment of skin diseases. The perception of the respondents in the study is thus consistent with the documented medicinal uses of Shea trees. Finally, the study found that respondents also used Shea trees as a pomade or massage cream. This is consistent with the use of Shea butter in the cosmetic industry, where it is used as an ingredient in various beauty products, including lotions, creams, and hair products (Akpapunam et al., 2021). The use of Shea butter as a cosmetic ingredient is driven by its moisturizing and emollient properties, which make it effective in maintaining skin and hair health. The perception of the respondents in the study is thus consistent with the documented cosmetic uses of Shea trees. This makes Shea tree, Shea tree (Gaertn C. F.), one of the most valuable trees for farmers where rural populations rely on Shea products for food and income (Honfo et al., 2012).

Figure 4. 8 What Shea means to respondents to your community.



Source: Semi-Structured Interviews (April 2022)

Reponses from the focus-group discussions also helped in throwing more clarity on the communities' thoughts and opinions on the shea tree. A male respondent in Kasulyili in the FGD explained;

> *"Traditionally, people regard the Shea tree as very beneficial. In this community, Shea butter is mostly used by herbalists aside from food to cure several infections including broken bones and dislocations".*

A female respondent in Kagbal's FGD added;

> *"As for the Shea tree, it has several benefits for us in this community. For example, Shea butter is often used as fuel for lanterns during the performance of certain traditional rites such as funerals and enskinment ceremonies. Some also use it as a sacrifice to the gods."*

For the respondents in Wayamba, a male respondent in the FGD elaborated;

> *"The Shea tree has been a beneficial plant in this area. In this community, Shea is used to help speed up the healing process of the umbilical cord of new born babies and wounds of circumcised male babies. It is also a good choice in this community for preparing certain traditional foods such as masa".*

From the above narrations, it can be observed that Shea trees have significant traditional benefits, especially to the people of the Tolon District. This correlates with Jamala et al.'s (2013) view about the shea tree benefits that are used as food, herbs etc. for income earning by farmers.

Again, responses from the key-informant interview reveal that farmers in the area have generally benefited from Shea trees. A key informant from Kasulyili expatiated;

"Here in this community, we do not take the tree for a joke, especially during the fruiting season. We depend on it for most of our cooking oil and income. For a community like ours, how can you afford to abandon Shea nut and butter for expensive cooking oils? In this house, we use Shea a lot. As I have just said, now you know relevant the tree is to us"

The Agriculture Officer in the area attempted to justify why Shea is perceived as an important socio-economic asset in the area. He said;

"As you may know, rural areas like these do not have lots of secondary and service jobs. Their main source of livelihood is the bush, which is farming and its related activities. So, if you live here and do not engage in such activities, you will suffer. Or if you want to live luxuriously in these areas, you will end up not the way you intended"

This means that the respondents in the area have good reasons for their subjective socio-economic importance of Shea trees. Moreover, the study reveals that farmers in the area have generally benefited from the Shea tree. Shea nut and butter are widely used for cooking oil and income, which is essential for rural areas like Tolon District, where farming is the main source of livelihood. According to Jamala et al. (2013), Shea trees are beneficial for income earning by farmers. In essence, the traditional benefits of the Shea tree to the people of Tolon District demonstrate the importance of preserving this valuable resource. This aligns with the findings of other studies that have highlighted the socio-economic importance of Shea trees in West Africa (Abubakari et al., 2020; Lawuo et al., 2021). Therefore, there is a need for sustainable management practices to ensure the continued availability of Shea trees and their benefits to the local communities.

4.3 Farmer's socio-economic perception of Shea Tree

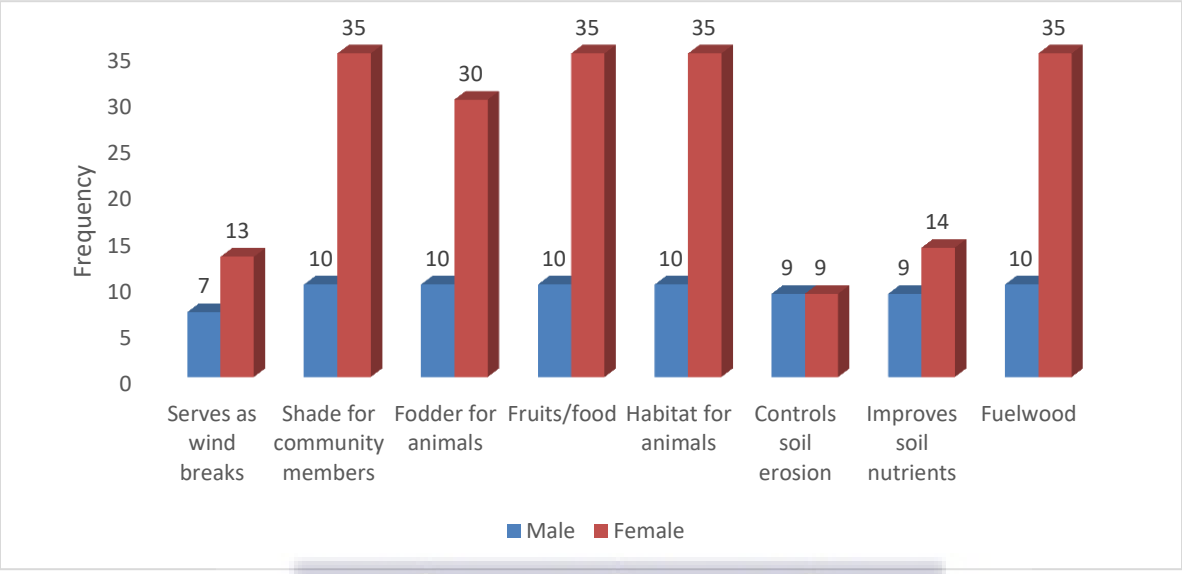
To zoom in on the social-economic and cultural perceptions of the Shea-tree, a series of questions were posed to respondents to acquire a deeper understanding of the value they attribute to the Shea-tree. The subsequent sections expound on these advantages.

4.3.1 Social benefits of the Shea tree

Regarding the social benefits respondents derive from Shea trees, nearly all of the 45 respondents from the Semi-Structured Interviews, including 10 males and 35 females, indicated that the trees serve as a source of fruit and food, a habitat for animals such as birds, fuelwood for domestic use, as well as shade for the people in their community. Additionally, the tree provides fodder for animals, improves soil nutrients, as wind breaks for buildings and provides soil erosion control mechanism for crop cultivation in the area (**Figure 4. 9**) Aside from these benefits another respondent of the FGDs added that the trunk of the tree is also used for making drums and mortar and pestles. An opinion leader in Wayamba explained that the leaves of the tree are often cut for domestic animals such as goats. This was what the agriculture offer referred to as fodder for animal feed. The findings align with the study by Jasaw et al. (2015) which found that the Shea tree leaves serve as fodder for both domestic and wild animals (Jasaw et al., 2015). It is also an astounding protector against bad weather such as heavy winds and rainfall (Hale et al., 2021). A female respondent of the FGD in Wayamba elaborated on this saying;

> *"Frankly, trees are good for us. See, during the winter last year, an uprooted roof almost got into our compound. It was by the grace of God that, the Shea tree by our house blocked it from passage."*

Figure 4. 9 Social benefits respondents derive from shea trees



Source: Semi-Structured Interviews (April 2022)

4.2.2.1 The group of people that benefit more from the social benefits of Shea trees

The study further probed which category of people in the study communities were likely to benefit more from the social benefits that Shea trees offer. The findings of the Semi-Structured Interviews indicate that the poor (36), the majority of whom are female household heads (28), are more likely to derive larger social benefits from the tree. This is because, during the fruiting season, the tree serves as their primary source of income and their means of subsistence. A female respondent in Wayamba explained during the in-depth interview;

> *"The only source of income and livelihood for us is through the Shea tree. During the fruiting season, we barely sleep till daybreak. You must wake up early at dawn to prepare to go to the bush to pick Shea nuts. We are exposed to the dangers of the forest especially*

snakebites and tree stumps which often block us to fall. Frankly, it is through Shea that I have been able to open this provision shop".

The opinion leader (KII) in Kagbal added that;

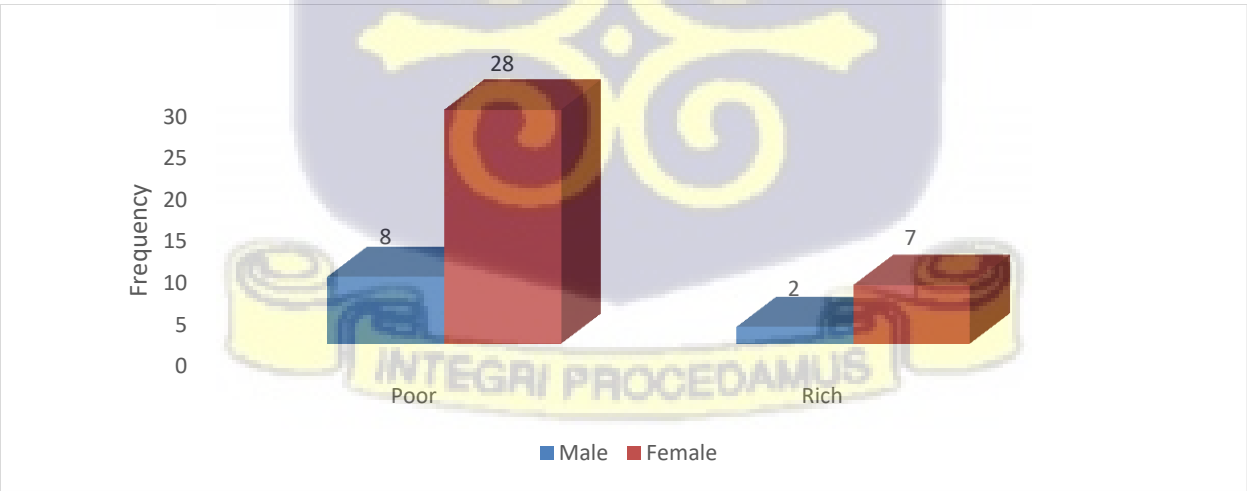
"In this community, many of us are more. And being more means you cannot afford to lose anything that will bring food to your table. This is quite different from the well-to-do families. For some of them, they wait to buy the nuts after it has been pre-processed."

This was not surprising to the Agriculture Officer who re-emphasised his earlier point saying;

"Over here, the poor tend to struggle more to make earns meat. So, during the season they go as far as they can with their pans to pick Shea. This makes these people the most important group benefiting from Shea."

Of the rich and the male households, only about 2 of them benefit more from the social benefits of Shea tress. These results are illustrated in **Figure 4. 10**.

Figure 4. 10 The group of people that benefits more from the social benefits of Shea trees



Source: Semi-Structured Interviews (April 2022)

4.2.2.2 Group of people more knowledgeable about the social benefits of Shea trees communities

The respondents from the in-depth-interviews were again asked to identify groups of people that were more knowledgeable of the social benefits of Shea trees. From the results, the majority 35 (77.8%) of the respondents' indicated females were more knowledgeable about the social benefits of the Shea tree than 10 (22.2%) of their male counterparts. Educated persons (35.6%) were less knowledgeable compared to the uneducated group (64.4%). Furthermore, poor people (80%) tend to know more about the social benefits of the Shea tree compared to rich people (20%). This could be a result of the direct involvement of the poor in the collection and processing of Shea products including the nuts. These are illustrated in **Table 4. 1** below.

Table 4. 1 Group of people more knowledgeable about the social benefits of Shea trees

Group	Frequency	Percentage
Male	10	22.2
Female	35	77.8
Total	***45***	***100***
Educated	16	35.6
Uneducated	29	64.4
Total	***45***	***100***
Children	4	8.9
Adult	41	91.1
Total	***45***	***100***
Rich	9	20
Poor	36	80
Total	***45***	***100***

Source: Semi-Structured Interviews (April 2022)

Meanwhile, the Agriculture officer said;

> *"In my opinion, the poor are more knowledgeable than the rich. This is because they are directly involved in the activity and have several uses to account for. generally. However, the rich are less knowledgeable of the social benefits, they have the resources to add value to the Shea tree across the value chain".*

This was not different from the opinions expressed by the key informants and FGDs. For example, an opinion leader Kasulyili explained;

> *"You see, the poor who directly do Shea activities have more knowledge of the uses here. At times, educated people come here to ask questions about how Shea is used here. This is interesting to see such people with advanced knowledge come to learn these things. So, I believe the poor possess much knowledge of the tree compared to the educated."*

The suggest that respondents of the study believe the poor have advanced knowledge of the social benefits of the farmers. This could be attributed to the characteristics of the study respondents and the location where the study was conducted. This is inconsistent with the study of Honfo et al. (2012) and Jamala et al. (2013) when they found a positive relationship between the level of education and knowledge of the benefits of Shea trees.

4.2.3 Economic benefits farmers derive from the use of Shea Trees

For the economic benefits of Shea trees, all the respondents indicated Shae trees have significant economic benefits for their livelihoods. These benefits according to them include income, food,

employment and raw materials for processing companies. These were rated by all the 45 sampled respondents from the in-depth-interviews. This is presented in **Infographic 4. 1** below. The economic benefits accrued from Shea trees was what made respondent during the FGDs as an "all-encompassing economic tree". For example, a female respondent Kagbal indicated;

> *"Everything of the tree is economically useful. We use the Shea fruits as food, the nut to produce shea butter, the tree itself for fuelwood and many more. See, I have someone who comes to buy the butter to goo and produce ointments and creams. So, the tree is a good tree".*

A KIIs member in Wayamba added;

> *"I believe the Shea Tree offers seasonal employment to the young women of this community. The picking and processing of Shea are intense during the Shea season, and almost all young women want to get a shea of it. Through the tree, they are to make money and get butter for preparing food. The wise among them even use the money they get from it to establish their small food vendor businesses. This has been helpful to the community"*

For the Agriculture officers, the economic benefits of the tree are immeasurable. He explained;

> *"The tree offers fruits and nuts. The fruits can be consumed directly, and the nuts can be processed into oil which has several uses including cooking and treatment of wounds. The nut can also be sold to processing companies for income. All these things add to the livelihood of these people."*

This correlates with the studies of Hatskevich et al. (2011), Honfo et al. (2012 2014), and Jamala et al. (2013) that across the Shea tree growing areas in the world have been identified to include the fruit, nut, kernel and butter, leaves and bucks, and the stem used for food, medicine/herbs, and gives farmers income.

Infographic 4. 1 Economic benefits Farmers derive from the use of Shea Trees

Source: Author's construct (April 2022)

4.2.3.1 The group of people that benefit more from the economic benefits of Shea trees

In response to the question of which demographic group gains the most from the economic benefits of Shea trees, 38 (84.4%) of respondents to the Semi-Structured Interviews indicated that women benefited the most, while only 7 (15.6%) indicated men benefited the least. For educated and uneducated people in the area, 66.7% % indicated the uneducated benefit most of the economic benefits of Shea. This could be influenced by the environment and the direct involvement those farmers have found themselves in and how they have used Shea products over

several decades now. This suggests that Shea trees have significant benefits for the residents of the Tolon District especially the females and uneducated. These results are presented in **Table 4. 2** below. The findings of the study correlate with the study by Friman (2022) in which he reported that Shea trees were economically useful to the respondents especially the poor. Some of Friman's respondents indicated they engage in the collection of Shea nuts because they were not wealthy. This implies the rich pay less attention to the economic importance of Shea trees especially when the fruit is in its raw state.

Table 4. 2 The group of people that benefits more from the economic benefits of Shea trees

Group	**Frequency**	**Percentage**
Male	7	15.6
Female	38	84.4
Total	***45***	***100***
Educated	15	33.3
Uneducated	30	66.7
Total	***45***	***100***
Children	6	13.3
Adult	39	86.7
Total	***45***	***100***
Rich	12	26.7
Poor	33	73.3
Total	***45***	***100***

Source: Semi-Structured Interviews (April 2022)

4.2.3.2 Group of people that are knowledgeable about the economic benefits of Shea trees

Regarding the demographic group that is shown to be more knowledgeable about the economic benefits of Shea trees in the study area, approximately 35 respondents from the Semi-Structured Interviews representing 77.8% indicated women are found to be more knowledgeable than their

counterpart men as only 10 respondents making 22.2% responded in their favour. Educated people were also shown to be less knowledgeable than the uneducated as about 11 (24.4%) respondents responded in favour of the educated as against 34 (75.6%) respondents who favoured the uneducated. Children did not show any significant knowledge of the economic benefits of the Shea tree. Adults were said to possess more knowledge about the economic benefits of the Shea tree as 45 (100.0%) respondents responded in their favour. The poor in the study area were also indicated to be more knowledgeable about the economic benefits of Shea trees compared to the rich. 38 of the respondents making 84.4% of the entire sample responded in favour of the poor as against 7 (15.6%) who responded in favour of the rich. These are presented in **Table 4. 3**. It can be argued here that women, the uneducated, adults, and the poor are the categories of people that seem to have significant knowledge of the economic benefits of Shea trees in the study area. As the study of Friman (2022) indicated, these people directly involve in the Shea business and have seen it very useful in supporting their livelihoods.

Table 4. 3 The group of people that are more knowledgeable about the economic benefits of Shea trees

Group	Frequency	Percentage
Men	10	22.2
Women	35	77.8
Total	***45***	***100.0***
Educated	11	24.4
Uneducated	34	75.6
Total	***45***	***100.0***
Children	0	0.0
Adult	45	100.0
Total	***45***	***100.0***
Rich	7	15.6
Poor	38	84.4
Total	***45***	***100.0***

Source: Semi-Structured Interviews (April 2022)

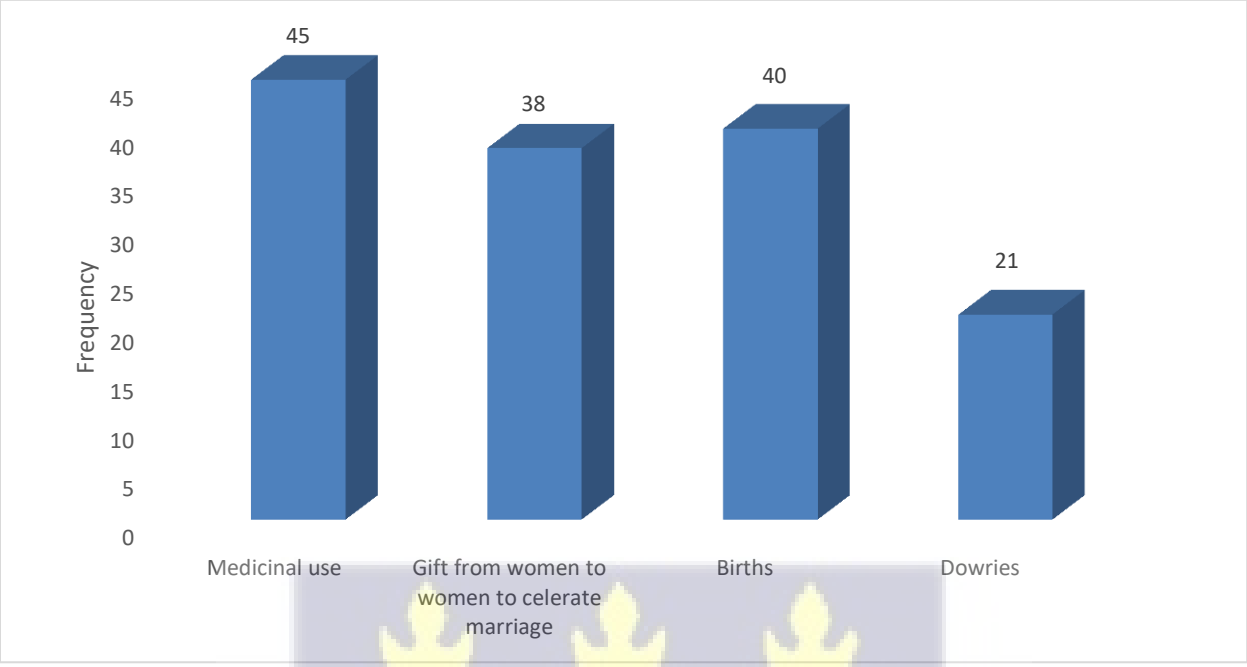
4.2.4 Cultural benefits of Shea trees

The use of shea trees in the study areas had several cultural benefits, including the provision of medicine, the exchange of gifts amongst women in celebration of marriage and the birth of children, and the provision of dowries for marriages. Responses from the in-depth-interviews showed that nearly everyone in the study areas made use of the medicinal properties of shea trees. About 38 of the respondents also indicated they use Shea products as gifts from women to women to celebrate marriages. 40 respondents of the total sample also use Shea as a gift for childbirth and cream for healing the umbilical cord of the new baby. This was further explained by a female respondent in Wayamba's in-depth interview, saying;

> *"You see when a woman gives birth to a baby; we mostly use the Shea butter to enhance the healing process of the umbilical cord. We don't use any alternative cream because, the most effective cream used for wound healing, for us, is Shea butter. So, everybody in this community knows it."*

About 21 of the respondents also indicated the tree is used as dowries in marriages in the area. Hence, both men and women in the area do appreciate its cultural values. These results are presented in **Figure 4. 11** below. Traditionally, Shea butter is often used in the Northern Region of Ghana when a new baby is delivered to facilitate the healing processing of the umbilical cord of the Newborn baby. This confirms the study of (Ferris et al., 2001; Gwali et al., 2011; Hatskevich, Jenicek, et al., 2011) that Shea oil and butter are used for various cultural reasons including marriage ceremonies and certain cultural rites.

Figure 4. 11 Cultural benefits derived from the use of Shea trees



Source: Semi-Structured Interviews (April 2022)

4.2.4.1 The group of people that benefits more from the cultural benefits of Shea trees

On assessing the group that benefits culturally from the Shea tree, between men and women, it appeared that women benefit more than men as 36 (80.0%) respondents favoured women against 9 (20.0%) respondents who favoured men. The poor also tend to benefit more than the rich in the study area as more than half (32, 71.1%) of the respondents supported the poor against (13, 28.9%) who supported the rich during the field survey. These are presented in **Table 4. 4**. According to Friman (2022), the shea tree, whose fruit and kernel are considered to be women's crops in West Africa, has a long history of being associated with women. This could explain why knowledge about the cultural benefits of Shea is associated with women.

Table 4. 4 The group that benefits more from the cultural benefits of Shea trees

Group	Frequency	Percentage
Men	9	20.0
Women	36	80.0
Total	***45***	***100.0***
Educated	17	37.8
Uneducated	28	62.2
Total	***45***	***100.0***
Children	0	0.0
Adult	45	100.0
Total	***45***	***100.0***
Rich	13	28.9
Poor	32	71.1
Total	***45***	***100.0***

Source: Semi-Structured Interviews (April 2022)

4.2.4.1 The group more knowledgeable about the cultural benefits of Shea trees

Between men and women, responses from the Semi-Structured Interviews showed that the group that is more knowledgeable of the cultural benefits of Shea trees in the study area were women. Only 10 (22.2%) of the respondent's indicated men are more knowledgeable than women. Thus, it can be inferred that women in the research region have a great deal of information regarding the cultural benefits of Shea trees. For the educated and uneducated group, the uneducated group (32, 71.1%) has more knowledge of the cultural benefits of Shea compared to the educated elites (13, 28.9%). More so, about 33 (73.3%) of the respondents indicated the poor are more knowledgeable of the cultural benefits of the Shea tree compared to 12 (26.7%) of the

respondents who indicated the rich are more knowledgeable of the cultural values of Shea trees as presented in **Table 4. 5**. However, a male key informant in Kasulyili argued by narrating;

> *"The educated are more knowledgeable about the cultural benefits of Shea trees. The reason is that they have advanced knowledge of what the Shea tree can do and the benefits the fruits can provide. They also know how to add value to it and sell the end product of the Shea nuts."*

Table 4. 5 The group of people more knowledgeable about the cultural benefits of Shea trees

Group	Frequency	Percentage
Men	10	22.2
Women	35	77.8
Total	***45***	***100.0***
Educated	13	28.9
Uneducated	32	71.1
Total	***45***	***100.0***
Children	0	0.0
Adult	45	100.0
Total	***45***	***100.0***
Rich	12	26.7
Poor	33	73.3
Total	***45***	***100.0***

Source: Semi-Structured Interviews (April 2022)

4.3 Factors influencing farmers' Perception of the Shea Tree as a socio-economic tree

The factors that influence farmers' perception of the Shea tree were explored to understand the study. These factors include education, the headship of households, land ownership, and access

to credit facilities. A male respondent from the FGD in the Kasulyili community narrated as follows;

> *"You see, the Shea tree you are talking about is a very important tree to us. Most of our lives as farmers depend on it. We use it to support our families and afford our children's school needs. We also get Shea butter which we use to prepare our food. But when you don't have land, it becomes a different issue. There is always discrimination, especially against our poor women over land boundaries. Most of our women get their income from it and even use it to support us when things are hard for us. Even on our farms, we get shade from it. It also protects our buildings from strong winds. So, for me, I will say it is a very important tree. However, we need to have more education in this area. The educated ones here don't cut trees".*

A female respondent from FGD in Kagbal also added;

> *"Shea is the most important tree here that gives us income. As a woman, if you don't have Shea butter in this community and want to beg for it from your colleagues is something very serious. So, we all try to reserve some on our farmlands and even encourage our husbands to conserve it for us. See, last year I donated a bowl of Shea butter to my friend who gave birth to a baby boy. It was used for the healing of the wound on the umbilical cord and the penis after the child was circumcised. So, for Shea, we have to still maintain them on our lands."*

Another female respondent in Wayamba FGD narrated as follows;

> *"You see, in this community, most of the women into petty trading started their business with income from Shea nuts and have formed groupings. Myself here, I opened this*

provision shop with the income I got from picking and processing Shea nuts into butter. The tree is helping us significantly. We have even formed susu groups that help us to save money for the farming season and to invest in other businesses. This gives us access to credit facilities to support our families"

This confirms the findings of the studies of (Boffa et al., 2000; Lovett & Haq, 2000) which indicated that people conserve trees such as the Shea for various reasons such as food, medicinal etc.

4.4 Challenges faced by farmers and associated opportunities in the production of Shea

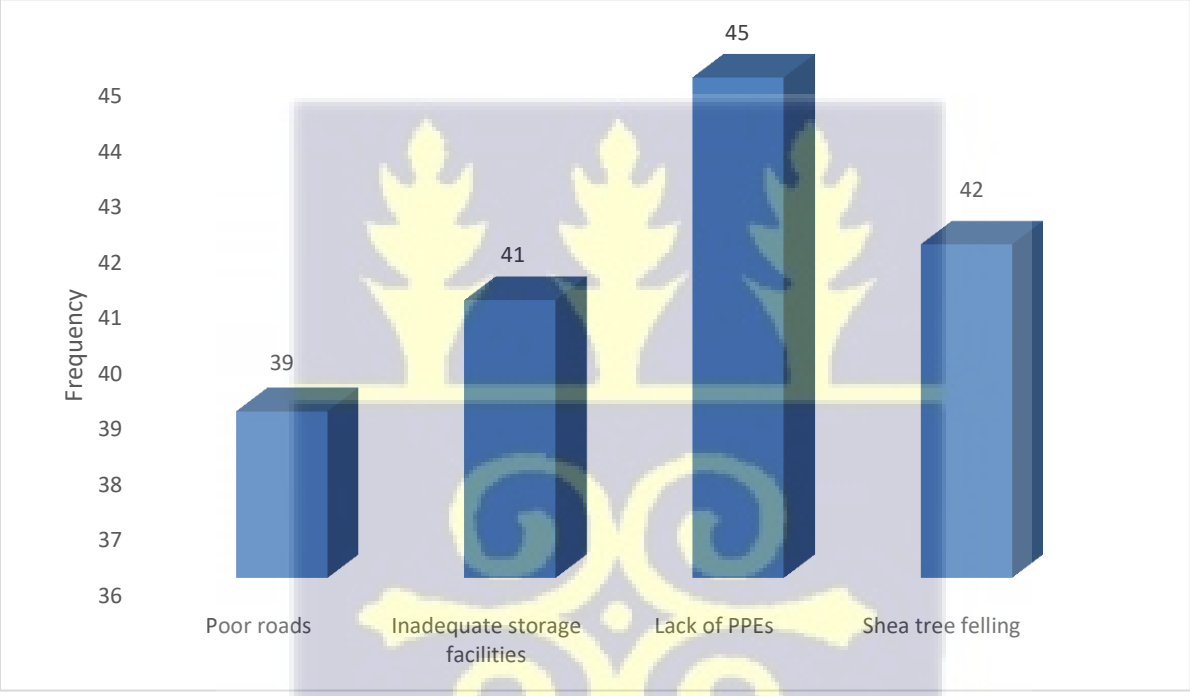
This section of the chapter focuses on the challenges faced by farmers with regard to the collection, production and processing of Shea trees and their products. The details of the challenges are presented below.

4.4.1 Challenges in accessing Shea trees and their products in this community

In terms of accessing Shea trees and their raw products in the study area, the challenges that farmers faced in the area were identified by the respondents from the Semi-Structured Interviews to include poor road network in the area, inadequate storage facilities, lack of Personal Protective Equipment (PPEs) and logging of Shea tree. 39 respondents indicated farmers in the study area are faced with poor motorable roads to the various locations of the Shea fields that limit the purchase of their products during the raining season. 41 respondents also said farmers are hindered by limited storage facilities whilst all the respondents (45) indicated lack of PPEs in the area limits their access to Shea trees. 42 respondents out of the total sample of 45 also pointed to the logging of Shea trees in the area. The results are illustrated in **Figure 4. 12**. The study by Seidu (2012) suggests that access to Shea nuts and its related products is a result of inadequate

motorable routs and logging of the tree for fuelwood. The destruction of shea trees and the alteration of the livelihoods of those who reside in these areas are primarily caused by fast urbanization. There are several ways that peri-urbanization takes place, such as the removal of Shea trees to make room for sand/stone mining and residential construction (Dapilah et al., 2019).

Figure 4. 12 Challenges in accessing Shea trees and their products in this community



Source: Semi-Structured Interviews (April 2022)

4.4.2 Challenges associated with the collection of Shea nuts

The challenges raised by respondents in the study area as those restricting them during Shea nut collection included gender biases and differences, land ownership issues, distance from home to

the Shea nut collection fields, snakebites, and the felling of the Shea trees. Responses from, the Semi-Structured Interviews show that 37 respondents indicated that gender issues or biases are some of the issues they face during the collection periods. Gender biases or issues included discrimination and abuse. 43 respondents also said they are faced with land ownership issues. With regards to the distance respondents walk from their various homes to the Shea nut collection fields, 44 of them indicated it was far from their homes. Hence, affected their collection timing very badly. 39 and 41 of the in-depth respondents also pointed to snakebites and Shea tree logging as part of the challenges they encounter during the collection periods respectively. These are illustrated in **Figure 4. 13**. To augment the above responses, a female respondent from the FGDs in Kagbal lamented;

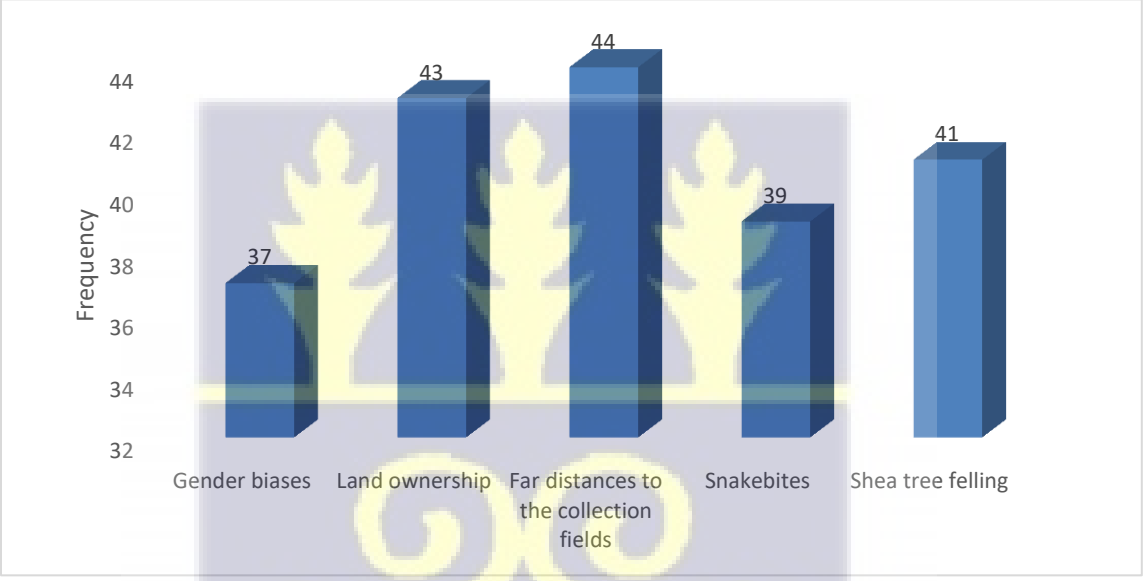
> *"See, during the Shea nut collection season, things are not easy for us at all. The distance of the parklands from home is very far and you have to wake up as early as 4:00 am to go to the bush. In doing so, we are exposed to a lot of hazards including snakebites. Meanwhile, both men and women are also cutting the tree for charcoal and for firewood. See, a certain man almost beat me up on his followed land where I once went to pick Shea nut. Just because the land is not mind, I was humiliated for breaking into his boundary to pick Shea nuts. So, for us women here, it is not easy for us."*

Another female respondent from Kasulyili FGD added;

> *"Most collectors in this area find it difficult to collect shea nut because they do not own land and you are not allowed to collect from someone's land. That is the main issue we all find ourselves."*

The lack of PPEs and other essential materials has exposed shea nut pickers to several dangers including snake bites. In a focus group discussion in their study in Nigeria, Kabiru et al. (2017), the respondents lamented the issue of snake bites that have caused several deaths in the area. This is consistent with the findings of this study, and the lack of PPEs is a worrisome issue for the collectors amidst the logging of the tree.

Figure 4. 13 Challenges associated with the collection



Source: Semi-Structured Interviews (April 2022)

4.4.3 Challenges associated with Shea processing.

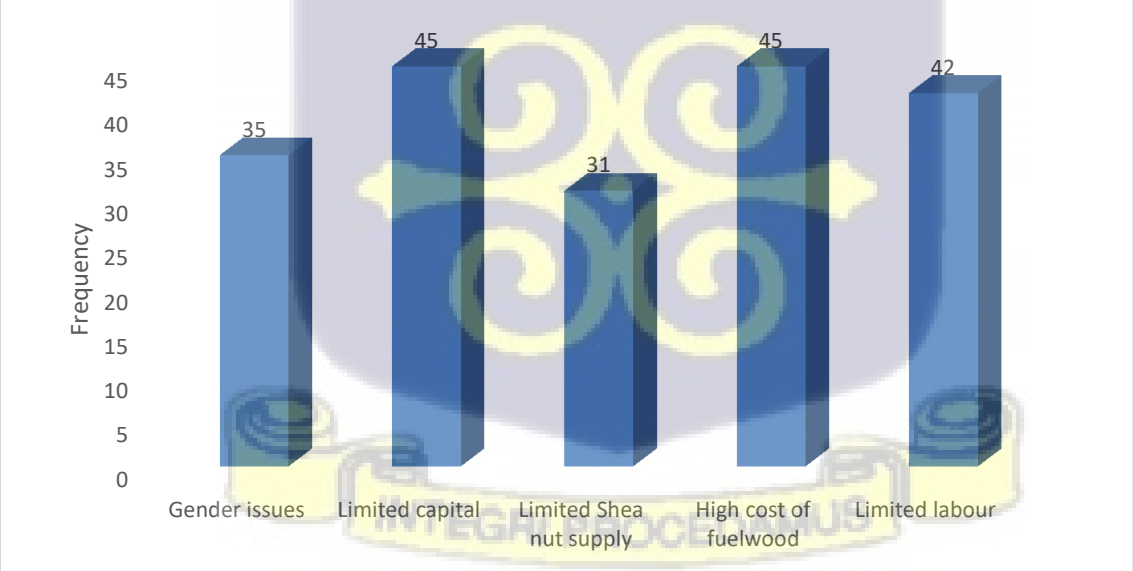
The challenges associated with Shea processing identified in the study area during the field survey included gender issues, limited capita, limited Shea nut supply, high cost of fuelwood, and limited labour. Shea processing in the study area is said to be female dominated rather than male dominated. About 35 respondents from the Semi-Structured Interviews said this widens the

gender gap of Shea processing in the area. To this effect, a female respondent lamented during the FGD at Wayamba, saying;

> *"Processing in most communities here is solely done by women. Men neither collect nor do they process but at the end of sales, we use it to support the men in taking care of the family."*

Those who had cited limited capital to process Shea nuts made up 45 respondents whilst those who had cited limited Shea nut supply made up 31 respondents. 45 and 42 respondents indicated the high cost of fuelwood and limited labour supplier hindered their capacity to process Shea products respectively. These are presented in **Figure 4. 14** below. The findings of the study confirm the findings of the study by Okwi (2019) which revealed that capital is one of the major challenges facing small-scale shea not processors in the shea growing areas.

Figure 4. 14 Challenges associated with Shea processing



Source: Semi-Structured Interviews (April 2022)

4.4.4 Challenges the community faces with the management of shea tree

To further explore the challenges farmers faced in the Shea industry, the study sought to understand some challenges those farming communities in the study area faced in their attempt to manage the Shea trees. The challenges identified included bush fires, deforestation, rainstorms, expansion of human settlement, and lack of bylaws to safeguard the Shea parklands. All the respondents from both the FDGs and Semi-Structured Interviews indicated bushfires are the most destructive mechanism that hinders the survival and sustainability of the Shea trees in the area. 44 respondents from the Semi-Structured Interviews also cited deforestation is a major challenge to the management of Shea trees in the area. 37, 38, and 41 respondents (**Figure 4. 15**) again from the IDIs indicated rainstorms, expansion of human settlement and lack of bylaws respectively make it difficult to manage Shea trees in the area. Upon realizing this through his personal experience, a male key informant in the Wayamba community lamented;

> *"For us here, due to lack of information, knowledge, and implementation of bylaws, it is very difficult to manage shea trees. Most people cut it for fuel wood to sell which becomes a source of livelihood for them. Proper sanctions and punishment are needed to be adhered to and issued to anyone who breaks the law. Otherwise, we will lose all the Shea trees in this area.*

A female respondent in the FGDs added;

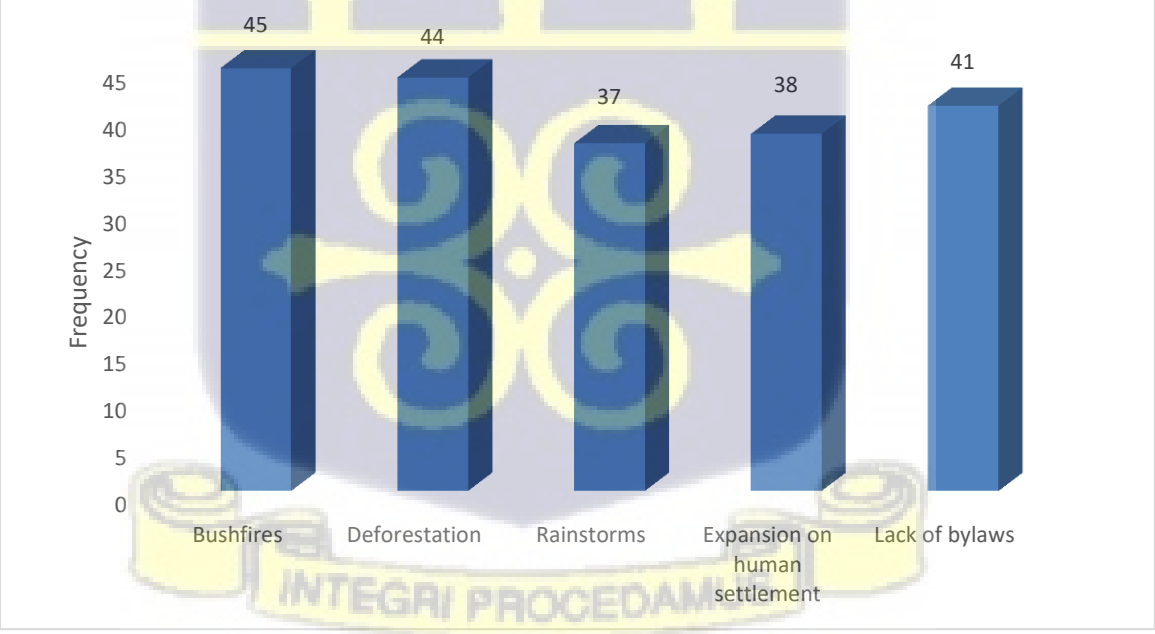
> *"You see, there is no single year people will not burn the bush. Sometimes when they burn the trees with intensity, the trees become non-productive until they fully recover from the stress. This is a serious issue that needs both government and local attention".*

The Agriculture Officer added by explaining as follows;

> *"The Shea tree in the area is not protected. The people here see it as a naturally occurring plant, hence need less attention. This makes the productivity over the years a bit unstable".*

The perception of Shea trees as naturally occurring plants and thus, do not need human protection could be a reason for the logging of the tree for fuelwood despite its economic importance. According to Dapilah et al. (2019), Shea tree depletion is caused by the lumbering of shea trees for the production of charcoal and fuelwood, the disintegration of local customary laws, and the absence of land use plans in these areas. This supports the findings of this study and adds more detail to the challenges identified in this study.

Figure 4. 15 Challenges the community faces with the management of shea tree

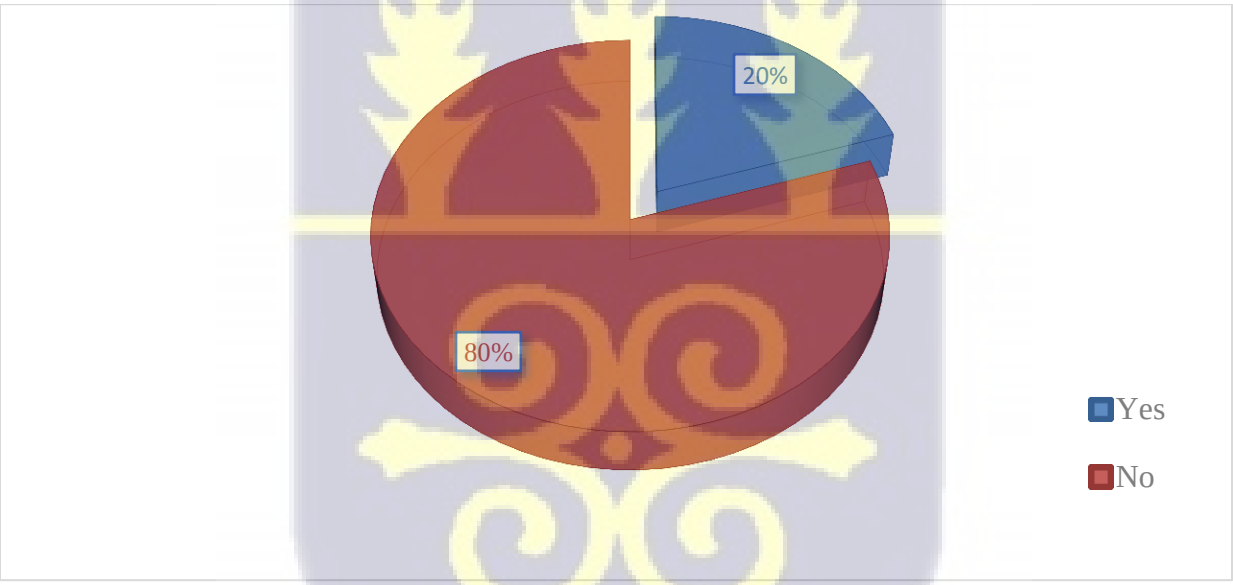


Source: Semi-Structured Interviews (April 2022)

4.4.5 Regulations to manage the use of shea trees

For the Shea tree to be safeguarded for future generations, the study tried to understand if the communities have any regulations that ensure the sustainable management of Shea trees. From the survey, majority (80%) from the IDIs indicated there were no regulations for the management of Shea trees in the area. Only 20% of the respondents indicated there were regulations for the management of Shea trees. These are presented in **Figure 4. 16** below.

Figure 4. 16 Regulations to manage the use of shea trees



Source: Semi-Structured Interviews (April 2022)

The findings that there are no regulations supporting the conservation of shea trees were supported by the respondents of the FDGs and the Agriculture Officer.

A member of the FDGs in Kagbal claimed;

> *"It is not only in this community. Almost all communities in this zone do not protect the tree. But looking at the benefits of the tree, I think if we all come together to protect it, it will help us. I, therefore, appeal to the authority to look into developing regulations for the tree".*

The Agriculture Officer also expressed his view saying;

> *"As I mentioned earlier, there are no regulations here to protect shea trees in this area. They see it as a tree growing on its own. For that matter, no need for regulation".*

This is very worrisome, especially given the rate at which the population is expanding with increasing climate change. The findings of the study are consistent with the study by Dapilah et al. (2019) which indicated that customary laws that existed to protect Shea trees have disintegrated, leaving the tree at the mercy of lumbering for fuelwood or construction.

4.6 Application of the Social Cognitive Theory in this study

The Social Cognitive Theory (SCT) posits that individuals learn through observing others, particularly models they identify with, and imitate their behaviour. In this study, it was found that the knowledge and utilization of Shea trees among the communities were influenced by their exposure to other community members who were successful in the cultivation and utilization of the trees. The findings showed that the knowledge of the use of Shea trees is passed down from generation to generation through observation and imitation. The study also found that the utilization of Shea trees was influenced by the beliefs of the community members regarding the medicinal and economic benefits of the tree. The beliefs of the community members are consistent with the self-efficacy component of SCT, which states that individuals' beliefs in their

ability to execute a particular behaviour are influenced by their previous experiences and the models they observe.

Moreover, the study found that the challenges faced in the management of Shea trees were due to the lack of information and knowledge on the importance of the tree, the lack of regulations to safeguard the tree, and the perception that the tree is naturally occurring and thus, does not require human protection. This can be attributed to the environmental component of SCT, which suggests that individuals' behaviours are influenced by the physical and social environment. The lack of regulations to safeguard the Shea trees suggests that the social environment is not supportive of the conservation and management of the tree. Furthermore, the perception that the tree is naturally occurring suggests that the physical environment is not seen as a valuable resource that requires human intervention to sustainably manage it.

4.6 Conclusion

As revealed in the study, the Shea tree is one of the most significant tree species in dry land areas such as that in the Tolon District. Through its derived products, of which Shea butter is the primary one, the species greatly raises the standard of living for local smallholder farmers. While other cash crops promote food security, the income made from selling Shea tree products contributes to the reduction of poverty in the study area by creating employment and other livelihood opportunities for farmers. Farmers in the area have shown significant interest in protecting Shea trees due to the positive economic benefits they obtain from it as well as pressure or motivation from families and farmer groups; giving clarity to the social cognitive theory adopted for this study.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarises key findings, conclusions as well as recommendations to improve the production, processing, and general perceptions of farmers regarding Shea trees in the study area.

5.2 Summary of Findings

This part summarizes the findings of the study along with the objectives that guided the study. These findings are summarized below.

5.2.1 Farmers' perceived socio-economic Importance of Shea Tree

Under this objective, the analysis of the data from the field survey revealed; for the socio-economic perceptions of Shea tree, that majority of the respondents of the study perceive the Shea tree to be socio-economically significant as most of the resident's obtained food, income, herbs, pomade, massage cream etc. Most of the people also cited the Shea tree serving as fuelwood for domestic use, habitat for animals including birds, fruits, fodder, shade for the community, and wind breaks respectively. Income and food, employment and raw materials for Shea processing industries were some of the key economic benefits that the people in the area derived from the tree. For the cultural benefits of the Shea tree, most the people used Shea tree for medicinal purposes, as a gift among women to celebrate marriages and new born mothers, and as dowries for the bride. Shea butter is often used in the Northern Region of Ghana when a new baby is delivered to facilitate the healing processing of the umbilical cord of the new born baby. Hence, both men and women in the area do appreciate its cultural values.

5.2.2 Factors that influence farmers' Perception of Shea Tree as a socio-economic tree

The findings revealed several factors that influence farmers' perception of the Shea tree as a socio-economic tree. The social and economic benefits including employment, food, income, shade, etc represented the most significant factors in the study found to influence farmers' perception of the area. Farmers appeared to perceive it as a very important tree on which their lives depend. They protected and conserved it because of the kind of benefits they get from the tree. Even though there are no laws known to many of them to conserve the tree, the income, food, employment, and several other cultural benefits derived from the tree motivated them to protect and conserve it.

5.2.3 Challenges faced by farmers and associated opportunities in the production of Shea tree in the Tolon District

The challenges facing farmers in the production of Shea trees identified by the study were lack of PPEs, inadequate/limited storage facilities for storing Shea nuts, poor road networks, and the prevalence of Shea tree logging in the area as key challenges that limited the accessibility to Shea tree products. With the collection of Shea nuts, the study identified gender biases, land ownership/rights, distance to collection fields, snakebites and Shea tree felling as challenges confronting farmers in the area. The processing of the Shea nuts was not also without challenges. Some of the challenges identified by the study included gender issues, limited capital, limited Shea nut supply, high cost of fuelwood, and limited labour supply. The community also faced difficulties in managing Shea tree parklands in the area due to bushfires, deforestation, settlement expansion, and lack of bylaws to regulate the Shea tree.

5.2 Conclusion

Generally, the study has reaffirmed the previous studies conducted on the benefits of the Shea tree. Not only do farmers, particularly poor women get employment with the tree, but they also get income, food, and raw materials in addition to other cultural and social benefits. Having acknowledged their perception of the Shea tree and some challenges they go through in the Shea industry; they think that effective policies should be made in the area to protect and conserve the Shea tree for generations to come. The study has also identified various challenges that farmers face in the management of Shea trees, including bush fires, deforestation, rainstorms, expansion of human settlement, and lack of regulations to safeguard the Shea parklands. The absence of regulations to protect the Shea trees is particularly concerning, as it puts the sustainability of the industry at risk.

5.3 Recommendations

To ensure the maximum utility and sustainability of the Shea tree, the following recommendation is made:

Collaboration Between the District Assembly and the Community Leaders:

For a significant decline in Shea tree felling/logging to be achieved in the area, there is the need to develop and enforce laws by the Tolon District Assembly in collaboration with the community leaders such that people who are found culpable can be brought to face the full rigorous of the law.

Community sensitization on the Conservation of Shea Trees:

Community sensitization needs to be done on the need to protect Shea trees via radios and Television stations as many people in the study area might not be aware that such policies and laws exist. A committee should be formed in various communities to hold people accountable for mismanaging and logging Shea trees.

Training on sustainable management of Shea trees:

Management training should be intensified in the area to improve the sustainable management of Shea trees. These may include planting Shea trees, weeding and protecting the trees.

Infrastructure development:

Road infrastructure is an important component to achieving maximum Agricultural productivity particularly the Rural Districts and Tolon District is no exception. Tolon District in collaboration with the ministry road through feeder roads should expand the road network in the district; this will boost productivity and enhance market access. Also access to potable water has long been a major problem for the Kagbal community this has affected the cost of shea processing shea and the provision of water sources will be a major boost to the shea industry.

Furthermore, lack of storage and credit facilities is a key problem hindering shea processors within the value-chain. The ministry of Agriculture in collaboration with the trade ministry through the national buffer stock should liaison with the district assembly and other corporate institutions to provide credit and storage facilities to enhance their productivity.

5.4 Future Research Directions

For future research directions, this study did not address the issues of the willingness of farmers to engage in the intensive cultivation of Shea trees. So, this area can be explored by researchers interested in the Shea industry to help improve farmers' livelihood. Other areas for potential research include policies that farmers are ready to cope with in protecting the trees; how sex, education, gender differences and many other factors influence farmers' behaviour towards Shear trees. Moreso, in the literature, there appears to be a paucity of studies on the different societal groupings on the knowledge of the social, economic, and cultural benefits of Shea trees. This is an area that future researchers may investigate to fill this knowledge gap in the academic literature.

REFERENCES

Adams, A.-M., Abudulai, I., & Bashiru, M. (2016). The Shea Industry and Rural Livelihoods among Women in the Wa Municipality, Ghana. Journal of Social Science Studies, 3(2), 40–56.

Adeola, R. G. (2012). Perception of Shea Nut Tree as an Economic Tree among Farmers in Oyo State, Nigeria. Undefined.

Ahenkan, A., & Boon, E. (2010). Commercialization of non-timber forest products in Ghana: Processing, packaging and marketing. Journal of Food, Agriculture and Environment, 8(2), 962-969.

Aleza, K., Villamor, G. B., Nyarko, B. K., Wala, K., & Akpagana, K. (2018). Shea (Vitellaria Paradoxa Gaertn C. F.) fruit yield assessment and management by farm households in the Atacora district of Benin. PLoS ONE, 13(1). https://doi.org/10.1371/journal.pone.0190234

Alliance, G. S. (2020). Shea value chain as key pro-poor carbon-fixing engine in West Africa. Food & Agriculture Org.

Anderson, E. S., Wojcik, J. R., Winett, R. A., & Williams, D. M. (2006). Social-cognitive determinants of physical activity: the influence of social support, self-efficacy, outcome expectations, and self-regulation among participants in a church-based health promotion study. Health psychology, 25(4), 510.

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. Psychological review, 84(2).

Bandura, A. (1982). Self-efficacy mechanism in human agency. American psychologist, 37(2), 122.

Bandura, A. (1989). Human agency in social cognitive theory. American psychologist, 44(9), 1175.

Bawa, A. (2019). Agriculture and Food Security in Northern Ghana. Asian Journal of Agricultural Extension, Economics & Sociology, 1–7.

Baziari, F. (2015). Understanding farmers' perceptions and the effects of Shea tree Vitellaria Paradoxa distribution in agroforestry parklands of Upper West Region, Ghana [PhD Thesis]. Michigan Technological University.

Baziari, F., Henquinet, K. B., & Cavaleri, M. A. (2019). Understanding farmers' perceptions and the effects of Shea (Vitellaria Paradoxa) tree distribution in agroforestry parklands of Upper West Region, Ghana. Agroforestry Systems, 93(2), 557–570.

Baziari, F., Henquinet, K. B., & Cavaleri, M. A. (2019). Understanding farmers' perceptions and the effects of Shea (Vitellaria paradoxa) tree distribution in agroforestry parklands of Upper West Region, Ghana. Agroforestry Systems, 93(2), 557–570. https://doi.org/10.1007/s10457-017-0150-1

Betey, B. (2013). Socio-economic impact of biofuel feedstock production on local livelihoods in Ghana. 5, 1–16.

Bhattacherjee, A. (2012), *Social Science Research: Principles, Methods, and Practices,* Scholar Commons, University of South Florida-USA.

Boffa, J.-M., Taonda, S.-B., Dickey, J. B., & Knudson, D. M. (2000). Field-scale influence of karité (Vitellaria Paradoxa) on sorghum production in the Sudan zone of Burkina Faso. Agroforestry Systems, 49(2), 153–175.

Bonkoungou, E. G. (2002). The Shea tree (Vitellaria Paradoxa) and the African Shea parklands. CFC Tech Pap, 4(21), 51–59.

Bradbury, L. (1988). Reflections on Traveling to" God's Land"and Punt in the Middle Kingdom. Journal of the American Research Center in Egypt, 25, 127–156.

Bryman, A. (2012), *Social Research Methods*, Oxford University Press, London-UK.

Buyinza, J., & Okullo, J. (2015). Threats to conservation of Vitellaria paradoxa subsp. nilotica (Shea butter) Tree in Nakasongola district, Central Uganda. International Science Congress Association.

Chlebowy, D. O., & Garvin, B. J. (2006). Social support, self-efficacy, and outcome expectations. The Diabetes Educator, 32(5), 777-786. doi:10.1177/0145721706291760.

Cocoa Research Institute of Ghana (CRIG): Sub Stations. http://www.crig.org.gh/sub_station.php, Date accessed; 26/02/2022.

Coulibaly, Y., Ouédraogo, S., & Niculescu, N. (2009). Experimental study of shea butter extraction efficiency using a centrifugal process. Journal of Engineering and Applied Science, 4(6), 14-19.

Creswell, J. W. (2009), *Research Design: Qualitative, Quantitative and Mixed Method Approach,* Sage Publications, New York-USA.

Creswell, J. W. (2013), *Research Design: Qualitative, Quantitative, and Mixed Method Approaches,* Sage Publications, New York-USA.

De Snoo, G. R. S., I. Herzon, H. Staats, R. J. F. Burton, S. Schindler, J. Van-Dijk, A. M. Lokhorst, et al. (2013) Toward Effective Nature Conservation on Farmland: Making Farmers Matter. Conservation Letters 6: 66–72. doi:10.1111/j.1755-263X.2012.00296. x.

Dennie, M. N. (2012). Medical Benefits of the Shea Nut Tree.

Fagan, C. L. (2015). Evaluating the potential for passive greywater irrigation in Northern Ghana (Doctoral dissertation, Michigan Technological University).

FAO. (2015). The contribution of tree crop products to smallholder households. Rome. Retrieved from http://www.fao.org/3/i4878e/i4878e.pdf.

FAO. (2017). The impact of the Shea nut industry on women's empowerment in Burkina Faso A multi-dimensional study focusing on the Central, Central-West, and Hauts-Bassins regions. Retrieved from http://www.fao.org/3/i8062e/i8062e.pdf.

FAO. (n.d.). Ghana at a glance | FAO in Ghana | Food and Agriculture Organization of the United Nations. Retrieved 21 October 2021, from https://www.fao.org/ghana/fao-in-ghana/ghana-at-a-glance/en/.

Ferris, H., Bongers, T., & De Goede, R. G. M. (2001). A framework for soil food web diagnostics: Extension of the nematode faunal analysis concept. Applied Soil Ecology, 18(1), 13–29. https://doi.org/10.1016/S0929-1393(01)00152-4

Friman, J. (2022). Challenging shea as a woman's crop – masculinities and resource control in Burkina Faso. Gender, Place & Culture, 0(0), 1–20. https://doi.org/10.1080/0966369X.2022.2078282

Gary, H. T. (1990). *Practical Sampling (1st ed),* Sage Publications, Newbury Park, USA.

Glenister, C. L. (2008). Profiling Punt: Using trade relations to locate'God's Land' [PhD Thesis]. Stellenbosch: University of Stellenbosch.

Global Shea Alliance. (n.d.). Global Shea Alliance Sustainability Program CONTENTS.

Goodwin, C. J. (2010), *Research in Psychology: Methods and Designs (6th Ed),* John Wiley and Sons, New Jersey-USA.

GSS. (2017). Ghana—Ghana Living Standard Survey (GLSS 7) 2017—Overview. https://www2.statsghana.gov.gh/nada/index.php/catalog/97/study-description

Gwali, S., Okullo, J. B. L., Eilu, G., Nakabonge, G., Nyeko, P., & Vuzi, P. (2011). Folk classification of Shea butter tree (Vitellaria Paradoxa subsp. Nilotica) ethno-varieties in Uganda. Ethnobotany Research and Applications, 9, 243–256.

Hale, I., Ma, X., Melo, A. T., Padi, F. K., Hendre, P. S., Kingan, S. B., ... & Van Deynze, A. (2021). Genomic resources to guide improvement of the shea tree. Frontiers in plant science, 1838.

Hall, K. S., Wójcicki, T. R., Phillips, S. M., & McAuley, E. (2012). Validity of the multidimensional outcome expectations for exercise scale in continuing-care retirement communities. Journal of Aging and Physical Activity, 20(4), 456-468.

Hatskevich, A., Jenicek, V., & Darkwah, S. A. (2011). Shea industry–a means of poverty reduction in Northern Ghana. Agricultura Tropica et Subtropica, 44(4), 223–228.

Hatskevich, A., Jenicek, V., & Darkwah, S. A. (2011). Shea industry–a means of poverty reduction in Northern Ghana. Agricultura Tropica et Subtropica, 44(4), 223-228.

Hatskevich, A., Jeníček, V., & Darkwah, S. A. (2011). Shea industry—A means of poverty reduction in northern in Ghana. Agricultura Tropica et Subtropica, 44(4), 223–228.

Hobfoll, S. E., & Wells, J. D. (1998). Conservation of resources, stress, and aging. In Handbook of aging and mental health (pp. 121-134).

Hobfoll, S. E., Shirom, A., & Golembiewski, R. (2000). Conservation of resources theory. Handbook of organizational behavior, 57-80.

Honfo, F. G., Akissoe, N., Linnemann, A. R., Soumanou, M., & Van Boekel, M. A. (2014). Nutritional composition of Shea products and chemical properties of Shea butter: A review. Critical Reviews in Food Science and Nutrition, 54(5), 673–686.

Honfo, F. G., Linnemann, A. R., Akissoe, N. H., Soumanou, M. M., & van Boekel, M. A. J. S. (2012). Indigenous Knowledge of Shea Processing and Quality Perception of Shea

Products in Benin. Ecology of Food and Nutrition, 51(6), 505–525. https://doi.org/10.1080/03670244.2012.705744

Hox, J. J., & Boeije, H. R. (2005). Data collection, primary versus secondary.

Isaac, J. A., Daburi, A., Ben-Umeh, K. C., Ifeanyi, B., & Builders, P. (2021). Selection of appropriate HLB values for a stable honey-shea butter emulsion and its efficacy in treating chemical burn wound. Journal of Medicinal Herbs, 12(3), 39-48.

Jakpa, S.-A., & Donkoh, S. A. (2018). Management of Shea Parklands in the West African Savannah. UDSIJD (Vol. 5). https://doi.org/10.47740/217.UDSIJD6I

Jamala, G. Y., Jada, M. Y., Yidau, J. J., & Joel, L. (2013). Socio-economic contribution of Shea tree (Vitellaria Paradoxa) in support of rural livelihood in Ganye, Sourtheastern Adamawa State, Nigeria. J. Env. Sci., Toxi. F. Tech, 6(5), 75–81.

Jarawura, F. X. (2014). Perceptions of drought among rural farmers in the Savelugu district in the northern Savannah of Ghana. Ghana Journal of Geography, 6, 102-120.

Jasaw, G. S., Saito, O., & Takeuchi, K. (2015). Shea (Vitellaria paradoxa) butter production and resource use by urban and rural processors in Northern Ghana. Sustainability, 7(4), 3592-3614.

Jasaw, G. S., Saito, O., & Takeuchi, K. (2015). Shea (Vitellaria paradoxa) butter production and resource use by urban and rural processors in Northern Ghana. Sustainability, 7(4), 3592-3614.

Jasaw, G. S., Saito, O., Gasparatos, A., Shoyama, K., Boafo, Y. A., & Takeuchi, K. (2017). Ecosystem services trade-offs from high fuelwood use for traditional Shea butter processing in semi-arid Ghana. Ecosystem services, 27, 127-138.

Javadi, M., and Zarea, K. (2016), "Understanding Thematic Analysis and its Pitfall", *Journal of Client Care* 1(1), pp.33-39.

Kabiru, S. M., Fadeke, A. F., & Adegbemi, A. S. (2017). Problems confronting Shea butter industry in Nigeria. International Journal of Sustainable Agricultural Research, 4(4), 101–112.

Kanlisi, S. K., Amenga-Etego, R. J., Okyere, A. D., Amoako, R., & Narh, E. (2014). The socio-economic contribution of small-scale industries to livelihood of womenin the shea butter industry in the wa municipality.

Kent, R. (2018). “Helping” or “Appropriating”? Gender Relations in Shea Nut Production in Northern Ghana. Society & Natural Resources, 31(3), 367–381. https://doi.org/10.1080/08941920.2017.1382626

Knauer, K., Gessner, U., Fensholt, R., Forkuor, G., & Kuenzer, C. (2017). Monitoring agricultural expansion in Burkina Faso over 14 years with 30 m resolution time series: The role of population growth and implications for the environment. Remote Sensing, 9(2), 132.

Koy, T. (2019). The Rio Declaration on Environment and Development. The 'Earth Summit Agreements: A Guide and Assessment, 85–96. https://doi.org/10.4324/9780429273964-9

Kraft, J. N., & Lynde, C. W. (2005). Moisturizers: What they are and a practical approach to product selection. Skin Therapy Lett, 10(5), 1–8.

Kumar, K. (1989). Conducting key informant interviews in developing countries (p. 1). Washington DC: Agency for International Development.

Kwasi, S. N. (2020). Suppliers Approach to Sustainable Procurement: A Case Study of Ghana Cocoa Board (Master's thesis, Høgskolen i Molde-Vitenskapelig høgskole i logistikk).

Leakey, R. R. B. (1991). Useful Plants of Ghana: West African uses of wild and cultivated plants. By DK Abbiw. London: Intermediate Technology Publications (1990), pp. 337, paperback\pounds 9.95, hardback\pounds 30.00. Experimental Agriculture, 27(3), 341–341.

Lentz, C. (2006). Introduction In Ethnicity and the Making of History in Northern Ghana (pp. 1–13). Edinburgh University Press. http://www.jstor.org/stable/10.3366/j.ctt1r24pw.5

Lovett, P. N. (2004). The shea butter value chain: Production, transformation and marketing in West Africa. West Africa Trade Hub (WATH) Technical Report No, 2.

Lovett, P. N., & Haq, N. (2000). Evidence for anthropic selection of the Sheanut tree (Vitellaria Paradoxa). Agroforestry Systems, 48(3), 273–288.

Maanikuu, P. M. I., & Peker, K. (2017). Medicinal and nutritional benefits from the Shea tree (Vitellaria paradoxa). Journal of Biology Agriculture and Healthcare, 7(22), 51-57.

Maranz, S., Kpikpi, W., Wiesman, Z., De Saint Sauveur, A., & Chapagain, B. (2004). Nutritional values and indigenous preferences for Shea fruits (Vitellaria Paradoxa CF Gaertn. F.) in African agroforestry parklands. Economic Botany, 58(4), 588–600.

Marriam, S. B. (2009). *The Case Study Research in Education,* Student Literature, Lundi.

Moore, S. (2008). The role of Vitellaria Paradoxa in poverty reduction and food security in the Upper East region of Ghana. Earth Environ, 3, 209–245.

Naslund, J. A., Aschbrenner, K. A., Kim, S. J., McHugo, G. J., Unützer, J., Bartels, S. J., & Marsch, L. A. (2017). Health behavior models for informing digital technology interventions for individuals with mental illness. Psychiatric rehabilitation journal, 40(3), 325–335. doi:10.1037/prj0000246.

Nations, U., Programme, D., Development, H., Reports, H. D., Reports, H. D., Development, H., … Development, H. (1980). 16. Poverty and Human Development, 201–212.

Neuman, W. L. (2003), *Social Research Methods (6th edition),* Pearson Publications, Boston-USA.

Neumann, K., Kahlheber, S., & Uebel, D. (1998). Remains of woody plants from Saouga, a medieval west African village. Vegetation History and Archaeobotany, 7(2), 57–77.

O. Nyumba, T., Wilson, K., Derrick, C. J., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. Methods in Ecology and evolution, 9(1), 20-32.

Okiror, P., Agea, J. G., Okia, C. A., and Okullo, J. B. L. (2012). On-farm management of Vitellaria Paradoxa CF Gaertn. In Amuria District, Eastern Uganda. International Journal of Forestry Research.

Okwi, W. (2019). Small-scale farmers' perceptions of the economic importance of Shea tree in Kuju sub-county, Amuria district [Thesis, Makerere University]. http://dissertations.mak.ac.ug/handle/20.500.12281/8460

Poudyal, M. (2009). Tree Tenure in Agroforestry Parklands: Implications for the Management, Utilisation, and Ecology of Shea and Locust Bean Trees in Northern Ghana, (December). Retrieved from http://etheses.whiterose.ac.uk/861/.

Pouliot, M. (2012). Contribution of "Women's Gold" to West African livelihoods: The case of shea (Vitellaria paradoxa) in Burkina Faso. Economic botany, 66(3), 237-248.

Rhodes, R. a. W. (2017). *Interpretive Political Science: Selected Essays*. Vol. 2. oxford: oxford University Press

Ros-Tonen, M. A., & Wiersum, K. F. (2005). The scope for improving rural livelihoods through non-timber forest products: an evolving research agenda. Forests, Trees and Livelihoods, 15(2), 129-148.

Sanou, H., Kambou, S., Teklehaimanot, Z., Dembélé, M., Yossi, H., Sina, S., ... & Bouvet, J. M. (2004). Vegetative propagation of Vitellaria paradoxa by grafting. Agroforestry systems, 60(1), 93-99.

Saunders, M., Lewis, P., and Thornhill, A. (2012), *Research Methods for Business Students*, Pearson Education Ltd, Harlow-UK.

Schreckenberg, K. (2004a). The contribution of Shea butter to local livelihoods in Benin.pdf. Forest Products, Livelihoods and Conservation, 91–113.

Schreckenberg, K. (2004b). The contribution of Shea butter (Vitellaria Paradoxa CF Gaertner) to local livelihoods in Benin. Forest Products, Livelihoods and Conservation. Case Studies of Non-Timber Forest Product Systems, 2, 91–113.

Scullin, M. K., Le, D. T., & Shelton, J. T. (2017). Healthy heart, healthy brain: Hypertension affects cognitive functioning in older age. Translational Issues in Psychological Science, 3(4), 328. doi:10.1037/tps0000131

Seidu Jasaw, G., Saito, O., & Takeuchi, K. (2015). Shea (Vitellaria paradoxa) Butter Production and Resource Use by Urban and Rural Processors in Northern Ghana, 7, 3592–3614. https://doi.org/10.3390/su7043592

Seidu, S. B. (2012). Prospects and challenges of the shea industry in the northern region of Ghana [Thesis]. http://udsspace.uds.edu.gh:80/handle/123456789/611

Sewell, A. M., Hartnett, M. K., Gray, D. I., Blair, H. T., Kemp, P. D., Kenyon, P. R., ... & Wood, B. A. (2017). Using educational theory and research to refine agricultural extension: affordances and barriers for farmers' learning and practice change. The Journal of Agricultural Education and Extension, 23(4), 313-333. doi:10.1080/1389224X.2017.1314861.

Shackleton, C. M., & Pandey, A. K. (2014). Positioning non-timber forest products on the development agenda. Forest Policy and Economics, 38, 1-7.

Sherry Ayittey. (2012). United Nations Conference on Sustainable Development (Rio+20) Rio de Janeiro, Brazil. In The Earth Summit Statement. Rio de Janeiro, Brazil.

Retrieved from https://sustainabledevelopment.un.org/content/documents/16986ghana.pdf.

Sikpaam, I. A., Mintah, S., & Fearon, J. (2019). Prospects and constraints of Shea butter processing: Evidence from Tamale Metropolis, Ghana. Ghana Journal of Horticulture (JHORT), 14(1), 22-37.

Simmons, D. R., Robertson, A. E., Mckey, L. S., Toal, E., McAleer, P., and Pollick, F. E. (2009) "Vision in Autism Spectrum Disorders", *Vision Research*, 49(22), pp.2705-2739.

Slater, M. D. (1989). Social influences and cognitive control as predictors of self-efficacy and eating behaviour. Cognitive Therapy and Research, 13(3), 231-245.

Smith, W. S. (1962). The land of Punt. Journal of the American Research Center in Egypt, 1, 59–60.

Social Research Association Code of Ethics (2003), Retrieved from *http://www,thesra.org.uk/document/pdfs/ethics03.pdf* (Accessed 15/12/2018)

Soladoye, M. O., Orhiere, S. S., & Ibimode, B. M. (1989). Ethnobotanical study of two indigenous multipurpose plants in the Guinea savanna of Kwara state-Vitellaria Paradoxa and Parkia biglobosa. Biennial Conference of the Ecological Society of Nigeria, 14th August, 13.

Springer, Boston, MA. Buchwald, P. (2010). Test anxiety and performance in the framework of the conservation of resources theory. Cognition, Brain, Behavior, 14(4), 283.

Tella, A. (1979). Preliminary studies on nasal decongestant activity from the seed of the Shea butter tree, Butyrospermum parkii. British Journal of Clinical Pharmacology, 7(5), 495–497.

Theophilus T. (2018), Food science and technology. University of Ghana, Ghana

Ugwu-Dike, P., & Nambudiri, V. E. (2022). A review of ethnomedicinal uses of shea butter for dermatoses in Sub-Saharan Africa. Dermatologic Therapy, 35(3), e14786.

United Nations. (2000). United Nations Millennium Declaration - A/RES/55/2. United Nations.

Wicker, F. D. P. (1998). The road to Punt. Geographical Journal, 155–167.

Yayah, A. (2018). Rethinking the Agency of Women in the Shea Industry. Politeia (02568845), 37(1).

APPENDIX A

SEMI-STRUCTURED INTERVIEWS GUIDE

Respondent consent.

Hello, my name is Yakubu Abdallah Alhassan, a graduate student at the Institute of Statistical, Social and Economic Research (ISSER), University of Ghana. I am undertaking a study to investigate farmers' perceptions of Vitellaria Paradoxa (Shea Tree), and how that has influenced their relationship towards the Shea trees in three selected communities (Wayamba, Kasulyili and Kagbal) in the Tolon district of northern Ghana. I wish to acknowledge that your participation is very crucial for the success of the study and participant will remain anonymous and all information provided will be kept with outmost confidential. This is purely an academic study and information provided will be used strictly for academics.

Note, do mark as many as applicable/type responses where necessary

Socio- Demographics

1. Community?
    i. Wayamba[ ]
    ii. Kasulyili [ ]
    iii. Kagbal [ ]
2. How old are you……32……?
3. Gender?
    i. Female [ ]
    ii. Male [ ]

4. What is your marital status?
    i. Single, Never married [ ]
    ii. Married [ ]
    iii. Divorced/separated [ ]
    iv. Widowed [ ]
5. What is your religion?
    i. Christian [ ]
    ii. Muslim [ ]
    iii. Traditional [ ]
    iv. Other (specify)……..
6. What is the highest level of education you achieved?
    i. No formal education [ ]
    ii. Primary education [ ]
    iii. Junior high school [ ]
    iv. Senior high school [ ]
    v. Tertiary education [ ]

Farmers Perceptions, Socio-Economic Importance, Production, Conservation Management Practices and Challenges of Shea Trees

Note, do mark as many as applicable and provide brief explanation

7. Are you originally from this district?
    i. Yes (native/indigenous Farmer)
    ii. No (migrant farmer)
8. What does shea tree mean to your community?

9. How will you describe people attitude towards shea trees in the community base on your tradition?
10. What are the Social benefits you can drive from shea trees? a. serve as wind breaks [ ], b. shades for community members [ ], c. fodder for animals [ ], d. fruits/ species [ ] , e. Food [ ], f. habitant for animals(birds) [ ] , g. control soil erosion[ ], h. improve soil nutrient [ ] i. fuel wood [ ]
11. Which group of people benefits more from the social benefits of Shea trees? a. Male/female [ ], b. rich /poor [ ], c. children/ adults [ ]

12. Which groups of people are more knowledgeable about the social benefits of Shea trees in these communities? a. Men vs Women [ ], b. Educated vs. Uneducated [ ], c. Children vs Adults[ ] , d. Rich vs Poor [ ]

13. What are the economic benefits you derive from the use of the Shea Trees?

14. Which group of people benefits more from the economic benefits of Shea trees? Probe a. male/female [ ], b. rich /poor[rich], c. children/ adults[ ] And why?

15. Which groups of people are more knowledgeable about the economic benefits of Shea trees in these communities? a. Men vs Women [ ], b. Educated vs. Uneducated [ ], c. Children vs Adults[ ] , wealthy vs Poor [ ]
16. What cultural benefits do you derive from the use of Shea trees? Probe (medicinal use, gift from women to women to celebrate marriage, births or for dowries).

17. Which group of people benefits more from the cultural benefits of Shea trees? Probe (male/female, rich /poor, children/ adults).

18. Which groups of people are more knowledgeable about the cultural benefits of Shea trees in these communities? Probe: Men vs Women, Educated vs. Uneducated, Children vs Adults, Rich vs Poor.

19. What traditional/local measures are in place to protect shea parklands in the community?

20. Are there any challenges in accessing shea trees and their products in this community?

21. What are these challenges associated with collection (Gender issues, right to the land, need to walk far etc)?

22. What are these challenges associated with processing (Gender issues, right to the land, need to walk far etc.)?

23. What are the challenges the community face with the management of shea tree? Probe: bush fires, deforestation, rainstorms, expansion on human settlement, lack of bylaws).

24. With these challenges stated, are there regulations to manage the use of shea trees in this community? Yes [ ] No [ ] How do the regulations work?

25. Any other comments about Shea in general? ANS:

Thank you for your responses

APPENDIX B

FOCUS GROUP DISCUSSION GUIDE

Respondent consent.

Hello, my name is Yakubu Abdallah Alhassan, a graduate student at the Institute of Statistical, Social and Economic Research (ISSER), University of Ghana. I am undertaking a study to investigate farmers' perceptions of Vitellaria Paradoxa (Shea Tree), and how that has influenced their relationship towards the Shea trees in three selected communities (Wayamba, Kasulyili and Kagbal) in the Tolon district of northern Ghana. I wish to acknowledge that your participation is very crucial for the success of the study and participant will remain anonymous and all information provided will be kept with outmost confidential. This is purely an academic study and information provided will be used strictly for academics.

1. Please introduce yourself by mentioning your position, your age and marital status.
2. How do you perceive Shea trees in this community? (Probe further based on answers)
3. What social benefits does shea provide to you in this community? (Probe further)
4. What cultural benefits does shea provide to you in this community (Probe further)
5. What economic benefits does shea provide to you in this community (Probe further)
6. Which group do you think benefits more from various benefits (social, economic, and cultural) shea provides (Male vs female, rich vs poor, adult vs children, and why?
7. What challenges do you face in the shea business? (Probe further)
8. How do you think these challenges can be addressed and, why?
9. How would addressing the challenges you mentioned help you?
10. Please you may add any comment you have about the Shea industry.

APPENDIX C

KEY- INFORMANT INTERVIEW GUIDE

Respondent consent.

Hello, my name is Yakubu Abdallah Alhassan, a graduate student at the Institute of Statistical, Social and Economic Research (ISSER), University of Ghana. I am undertaking a study to investigate farmers' perceptions of Vitellaria Paradoxa (Shea Tree), and how that has influenced their relationship towards the Shea trees in three selected communities (Wayamba, Kasulyili and Kagbal) in the Tolon district of northern Ghana. I wish to acknowledge that your participation is very crucial for the success of the study and participant will remain anonymous and all information provided will be kept with outmost confidential. This is purely an academic study and information provided will be used strictly for academics.

1. Please introduce yourself by mentioning your position, your age and marital status.
2. As an opinion leader, how do you perceive Shea trees in this community? (Probe further based on answers)
3. To you, what social benefits does shea provide to the people of this community? (Probe further)
4. What cultural benefits does shea provide to the people of this community (Probe further)
5. What economic benefits does shea provide to the people of this community (Probe further)

6. Which group do you think benefits more from various benefits (social, economic, and cultural) shea provides (Male vs female, rich vs poor, adult vs children) shea provides, and why?
7. What challenges do the people face in the shea business? (Probe further)
8. How do you think these challenges can be addressed?
9. How would addressing the challenges you mentioned help the community?
10. Please you may add any comment you have about the Shea industry.

Thank you.