

Prospects and constraints of shea butter processing: Evidence from Tamale Metropolis, Ghana

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Abstract

Shea butter processing and export is one of the major economic and traditional activities in the Tamale Metropolis. In spite of the huge potential of the shea industry to the socioeconomic development of northern Ghana and Ghana at large, the industry is still bedeviled with several challenges. This study was therefore conducted to identify the prospects and constraints of the industry and to provide suggestions that could help mitigate the challenges for improved livelihood. The study employed the Convergent Parallel Mixed Design (CPMD) to evaluate the prospects and challenges of shea butter processing and export in Tamale, Ghana. Twenty-five (25) shea processing firms were selected through a multi-stage sampling procedure. SWOT analysis technique was used to evaluate constraints and prospects and the most critical constraint identified using Kendall's coefficient of concordance test. Results indicated that there is a continuous increase in demand for shea butter at the international market; shea butter has a higher comparative advantage over cocoa as substitute for cocoa butter and can be artificially propagated to reach fruiting within six (7) years. Results from the Kendall coefficient of concordance test indicated that 25% of processors indicated that inadequate finance was the most critical constraint. Capacity building should be intensified for the shea butter processors to assist them add value for both local and international consumption and to keep proper production records. Organic shea butter certification for export should be localized. There should be laws to regulate the upsurge in shea kernel exportation in order to enable local processors to have adequate quantities of the raw materials for increased production which can contribute to job creation for Ghanaians.

Keywords; shea butter, processors, prospects, constraints, organic shea butter certification, Tamale Metropolis.

Introduction

European explorers recorded the existence of the shea tree as early as 1728. However, first samples were identified and collected by Mungo Park in 1796. It was 30 years after Park's expedition to West Africa that the tree was then classified as *Vitallaria paradoxa* by Von Geartner in 1807 (Feris, 2001; CRIG, 2002). According to Garba & Sanni (2015) there are two main species of the shea tree, the West African species was classified as *Butyrospermum parker* by Theodora kotschy while the East African species was classified as *Butyrospermum nilotica* in 1865. The shea tree *Vitallaria paradoxa* is from the botanical family saptotaceae and hitherto used to be called *Butyrospermum paradoxum*. The tree grows well in the southern parts of the Sahel and northern parts of the Guinea Savannah ecological zones respectively (CRIG, 2002; Garba & Sanni, 2015). The shea tree is said to have a comparative advantage over other oil producing tree crops like the oil palm, coconut, cashew and many others. The shea tree has the ability to thrive well in the

savannah ecological zones where oil palm and others cannot grow well because of its ability to thrive well in low rainfall areas (Feris, 2001). Hatkerich *et al.*, (2011) argued that, the shea tree is the second most important oil tree crop in Africa but remains first in Northern Ghana. The tree thrives better in 21 countries within the continent of Africa namely; Benin, Ghana, Chad, Burkina Faso, Cameroon, Central African Republic, Ethiopia, Guinea Bissau, Cote d'Ivoire, Mali, Niger, Nigeria, Senegal, Sierra Leone, South Sudan, Togo, Uganda, Zaire, Guinea Conakry, Democratic republic of Congo, Kenya (Manasieva, 2011). The shea tree is an exclusive and important economic tree found in western and central Africa and particularly abundant in northern savannah areas of Ghana, that is Upper East, Upper West and Northern Region (Yidana, 2004).

In Ghana, the shea tree flourishes extensively in the Guinea Savannah and less abundant in the Sudan Savannah. CRIG (2008) indicated that, sparse stand of the shea tree are found in some part of the southern sector such as Brong Ahafo, Ashanti, Eastern and Volta Regions. The shea tree takes almost 15 years to reach maturity under natural propagation in the forest. However, recent research has indicated that, the artificially propagated shea (grafted shea trees) take approximately 7 years to reach maturity (Yidana, 2009). According to Quianoo (2016), all parts of the shea tree are of great value of which sheabutter obtained from the fatty extract is the most important and widely known product, the leaves are used as medicine to treat stomachaches and headaches and the bark of the tree is boiled and taken as beverage to treat diabetes. The rich nutritional content in the butter makes it a useful base for local pharmaceutical preparations. The butter is also used to make soap, pomade and other cosmetics. Sheabutter can also be used as cocoa butter substitutes (Fleury, 2000). The cake from which the oil is extracted is useful for plastering mud houses in the rural areas (Olaniyan and Oje, 2002).

Ghana has the potential to produce 200,000 metric tons of Shea nuts per annum. However, the estimated quantity of she nuts collected in Ghana per annum is only 130,000 metric tons. Out of this, 60,000 metric tons is exported and 45,000 metric tons out of the exported 60,000 metric tons are exported as shea kernels without any form of value addition with the remaining 15,000 metric tons representing butter export (Pufaa, 2010). The direct export of nuts without any form of value addition is a major challenge to the industry, reaping the industry of its potential capacity to export value added shea product for higher foreign exchange earnings as well as displacement of labor.

The six leading producers of shea kernel in West Africa are Mali, Ghana, Nigeria, Burkina Faso, Cote d' Ivoire and Benin (Table 1). In terms of potential production of shea kernel, Nigeria and Mali have been reported to have higher estimated shea kernel production potential than any other West African state. Studies by the West African Trade Hub (2004) indicated that Ghana (24%) is second to Mali (28.03%) in terms of actual Shea kernel production. However, Ghana has a higher comparative advantage over all the other leading West African Shea Kernel producers in shea butter export (15, 000 metric tons per annum). This means that the value added to shea kernel could secure Ghana greater revenue in the form of export duty and direct income to the exporters if the remaining 70,000 metric tons uncollected kernels are collected, process and exported.

Table 1: Estimated Annual Shea Kernel Production and Utilization in West Africa

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

Source; WATH Technical Report No. 2, November, 2004.

The prospects of the shea industry are directly linked to the high demand at the international market than the local market. The level of investment and development of the industry is a key determinant of the industry's fate as stressed by Lovett (2004). The growing demand of the commodity as an ingredient in the cosmetic, pharmaceutical and confectionary industries has also made it popular in recent years. Companies, such as L'Occitane (UK), the Body Shop international and other upscale personal care product manufacturers, have highlighted the beneficial qualities of shea butter as an ingredient in a range of personal care products (Stathacos, 2004). While the demand for shea and shea products at the international community continues to increase, huge quantities of shea kernels are left to rot in the bush while greater percentage of the kernel collected are exported directly without any value addition hence rendering the local industries' inability to meet international demand (Lovett, 2004).

Furthermore, other challenges such as, financial and marketing challenges faced by many small and medium scale enterprises (SMEs) in the shea value chain also has its share in making the shea business unattractive (Pufaa, 2010). Moreover, lack of government attention on the industry, irregular and disjointed marketing system, low level of technology and unattractive lending arrangements on the part of financing institutions and the recent upsurge in mass shea kernel exportation have rendered the shea business unattractive (Pufaa, 2010; Kavaarpuo, 2010). In the light

of these, most shea butter processing groups have not been able to purchase enough shea nuts coupled with the lack of right modern processing tools and equipment that could increase production have not been used. Additionally, the nuts pickers have not been able to pick and transport large volumes of nuts home leaving large volumes of nuts to rot in the bush (Kavaarpuo, 2010). Holtzman (2004) argued that, over 48% of the shea nuts remain uncollected and rot on the farms while 82.5% of what is collected is exported as kernels without any value addition.

Research Methodology

Study Area

Tamale is located at the center of Northern Region and shares boundaries with seven districts; Savelugu and Nanton districts to the north; Tolon and Kumbungu districts to the west; central Gonja District to the South- west; East Gonja District to the South and Yendi District to the east. (Tamale Metropolitan Assembly profile report, 2009). The Metropolis records a unimodal rainfall of about 1100mm within 95-100 days ranging from April/May to September/October with a peak season in July/August. The dry season starts from November to March with day temperatures ranging from 33 °C to 39 °C while the mean night temperature ranges from 20 °C to 22 °C (TMA report, 2009). The mean annual day sunshine is approximately 7.5 hours. The high temperatures in the day could be exploited for the drying of shea nuts and as a source of economically sustainable solar energy for shea butter processing. Activities like Shea butter processing which supplements household income of the people are very important in the metropolis. Shea fruits are one of the most treasured agricultural products in the Metropolis because it is harvested between April/May when the dry season and its accompanying hunger sets in (Yidana, 2009).

Sampling

The study made use of the Convergent Parallel Mixed Method Research Design (CPMM) merging both quantitative and qualitative data to give a comprehensive analysis of the problem. Both qualitative and quantitative data were collected at the same time using semi- structured questionnaire. Mixed method was chosen in order to give a better understanding, description and analysis of the phenomena in the shea industry

The study area was purposively selected due to the high inflow of Shea kernels from the surrounding districts evidenced by the existence of substantial number of shea butter processing centers. Two-stage sampling method (Multi-stage sampling) was adopted in order to select respondents for the study.

Stratified sampling was used in the first stage where the study area was put into two strata, Tamale North and Tamale South of which simple random sampling was used to select ten (10) processing firms from each stratum, whilst convenient sampling was used to select 5 available exporting firms.

Table 2: List of shea butter processing and exporting firms that were interviewed

Name of firm	Type of firm	Number of males	Number of females	Total
Yunzaa	Processor/Exporter	0	125	125
Suglo-mboribuni	Processor	1	68	69
Mandeeya	Processor/Exporter	0	86	86
Suglo-nya buni	Processor	0	20	20
Tuntieya women 1	Processor	0	30	30
Tuntieya Jisonayili	Processor	1	39	40
Tuntiaya Vittin	Processor	1	39	40
Suglo-Mboribuni 2	Processor	0	61	61
Tiyumba	Processor	1	22	23
God's Grace	Processor	2	36	38
Sanga Women Association	Processor	2	19	21
Gubikatigbai	Processor	3	68	71
Malshegu Women Association	Processor	0	3	3
Tuntieya women 2	Processor	1	29	30
Pagsung processing center	Processor/Exporter	2	38	40
Tuntieya Women 3	Processor	2	34	36
Kasalgu	processor	4	42	46
Nantoo zoo	Processor	1	22	23
Tiehisuma	Processor/Exporter	2	65	67
Tuutingle	Processor	0	20	20

Source: Field survey, 2018

The shea butter and kernel exporting firms that data were solicited are; Sekaf Ghana Limited, Savannah Fruit Company (SFC), Yumzaa butter processing center, Mandeeya processing center and Tiehisuma processing center

Theoretical framework

SWOT Analysis

SWOT analysis is a technique used to measure the strengths, weakness, opportunities and threats (SWOT) of an organization, institution or an industry (Fig. 1). It analyzes the internal strengths and weaknesses of the industry as well as the external opportunities and threats that the industry faces. This helps to avoid what is not possible and work towards what is possible. In the SWOT analysis, both strengths and weakness are internal factors while opportunities and threats are external factors hence the strengths and opportunities combined constitutes the prospects while the weaknesses and threats combined also constitute the constraints or challenges.

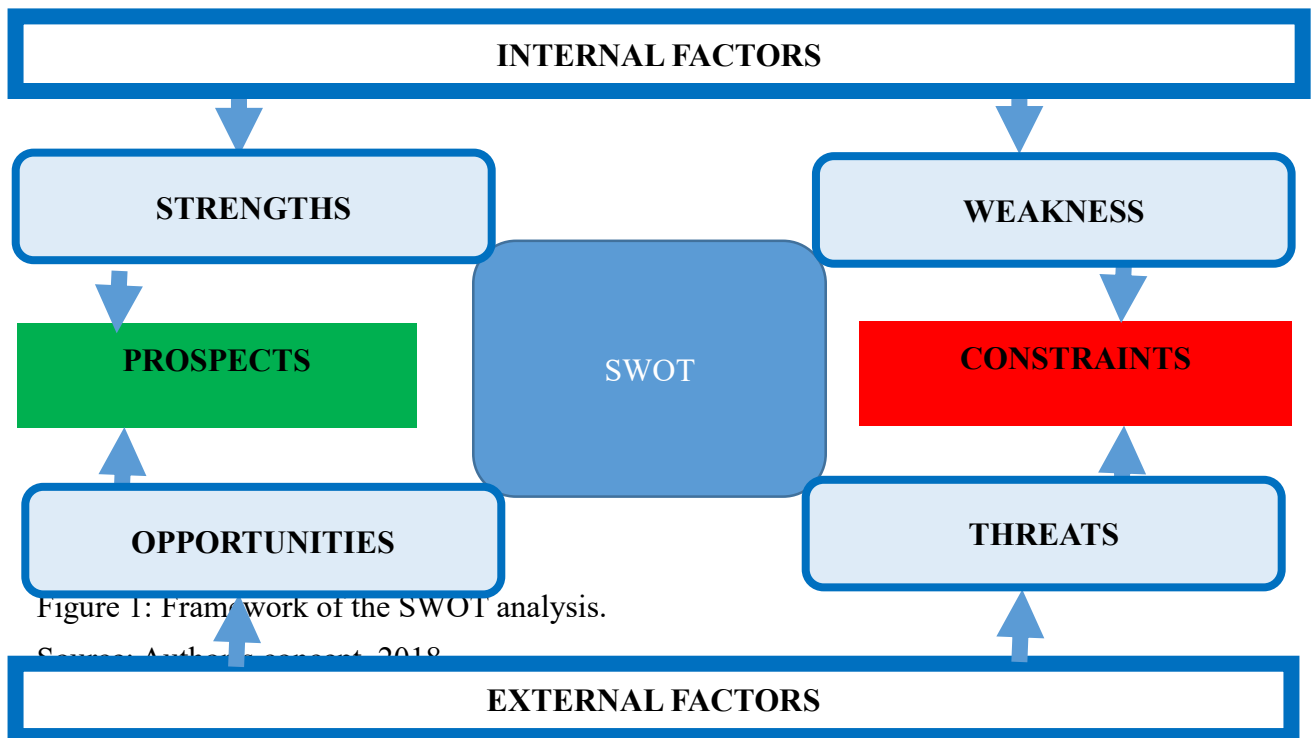


Figure 1: Framework of the SWOT analysis.

Source: Author's Concept, 2018

Kendall Coefficient of Concordance

Kendall's coefficient of concordance (W^a) test was used to identify and rank the constraints of shea processing in Tamale Metropolis. The Kendall's coefficient of concordance test is a nonparametric statistical procedure used to rank a given set of constraints, from the most influential to the least influential as well as measure the degree of agreement or concordance among the respondents. The constraints were ranked from the most influential to the least influential using numerals 1, 2, 3.....n in order (where n is a positive integer). The total rank score for each constraint was computed and the constraint with the least score was ranked as the most pressing

constraint, while the constraint with the highest score was ranked as the least pressing constraint. The total rank score computed was used to calculate Kendall's Coefficient of Concordance (W^a), which measures the degree of agreements among respondents in the ranking.

Kendall coefficient of concordance (can be computed as follows

$$R_i = \sum_{j=1}^m r_{i,j}$$

.....(1)

And the mean value of these total ranks is

$$\bar{R} = 1/n \sum_{i=1}^n R_i$$

.....(2)

Sum of squared deviations S, is defined as

$$S = \sum_{i=1}^n (R_i - \bar{R})^2$$

..... (3)

And the Kendall's coefficient W is;

$$W = \frac{12S}{m^2(n^3 - n)}$$

..... (4)

The value of W (coefficient of concordance) would determine the most pertinent constraint. The value of W ranges from 0 to 1, when

W=0; it means there is no overall trend of agreement among the respondents (, hence all constraints have equal chances of becoming the most pertinent.

W=1; it means there is unanimity among the respondents hence the constraint with the highest rank becomes the most pertinent constraint.

Intermediate values of W indicate greater or lesser degree of unanimity among respondents.

Results and Discussion

Among the 20 sampled shea butter processing firms in Tamale, gender distribution statistics reveals that female processors dominate the shea butter business with a percentage of 97.41% whereas their male counterparts constituted only 2.59% of the total population of butter processors in the firms. The finding of this study agrees with Saaka (2012) and further confirms earlier findings by Pufaa (2010) who concluded that about 97.3% of women are involved in the shea butter processing business in Tamale. The very high dominance of women in the Shea butter

processing could be that while men are responsible for providing foodstuffs to their families in northern Ghana, women are however responsible for turning these foodstuffs into consumables (Ditto *et al.*, 2006). These marginalized women are therefore expected to engage in extra income generating ventures in order to keep their families. One of the women at the Tiyyumba processing center had this to say “... *Shea butter processing is seen as women’s gold in northern Ghana and remains the only activity that keeps running throughout the dry season. Though the profit we generate is not much however, it is better than sitting idle, it helps us to support our husbands to keep the families running*”. There are principally three sources of kernels for shea butter processing firms; self-collected kernels, purchase kernels and those who use both self-collected kernels and purchase kernels. The survey revealed that only 15 percent of the firms use self-collected kernels for processing. These are women groups who are engaged in other extra income generating activities such as trading and weaving. These women are partially engaged in shea butter processing and only come together to process when one of them has ready shea kernel for processing. Some (40%) of the firms used both self-collected and purchase kernels. Such firms buy good looking kernels from the market to supplement kernels collected by its women groups for processing. Examples are Sekaf Ghana Limited, Savannah Fruit Company, Yumzaa and Mandeeya processing centers. Majority of the firms (45%) purchase kernels for processing. Processing firms which fell in this group are mostly own and controlled by one person who brings women to process and he pays them for their labor.

The level of machinery use in the butter processing centers in Tamale is still low. The study revealed that no processing center could be described as being fully mechanized, majority were semi-mechanized. However, the findings of this study are contrary to Addaquay (2004) who concluded that the traditional (Manual) method of processing predominates in Africa. It is important to note the distinction between the two studies for better conclusions to be drawn. Processors who are in groups have substantial level of machinery such as kneaders, grinders and heaters this is not the case of individual processors. Those who process butter on individual basis barely use machines.

Table 3: Descriptive statistics of the processing firms

Variable	Percentage
Sex	
Male	97.41
Female	2.59
Sources of Nuts	
Self-collected	15
Purchase	45
Both (Self-collected & purchase)	40
Level of Machinery	
Manual/Traditional	10
Semi-mechanize	90
Mechanize	0

Source: Field Survey, 2018

In order to unearth the prospects and challenges of the shea industry, both primary and secondary data were used. The primary data on the SWOT analysis was obtained through key informant interview. The “Mangajzia” (President) of all the processing centers were interviewed drawing questions using the SWOT analysis technique. This was augmented by relevant literature in the shea industry in order to give a comprehensive SWOT analysis of the shea industry

Table 4: SWOT Analysis unearthing both prospects and constraints of the shea processing industry

Strengths	Weaknesses
<ul style="list-style-type: none"> ❖ Shea trees are wild and do not require much attention like other tree crops such as cocoa, coffee and oil palm. ❖ Research has confirmed that the shea tree can reach maturity within 7 years through artificial propagation (grafting) unlike in the wild where it takes approximately 30 years to reach maturity and begin fruiting (Yidana, 2009). ❖ There are NGOs available to support the growth of small and medium size enterprises specifically in the northern part of the country where shea is in abundance. ❖ Every part of the shea tree is useful. The cake produce during the butter extraction is used to generate biogas and also as a fuel for cooking. The roots, bark, sap, leaves and kernels are all used for the manufacture of useful products such as paints, herbal medicines, and condoms. ❖ The export of shea butter has led to the discovery of other business opportunities such us the high global demand for honey, neem oil, and baobab seed oil. This has provided alternative employment to people and companies. Through the survey, leaders of firms such as Sekaf Ghana Limited, SFC, Tiehisuma Yumzaa and Madeeya processing centers confirmed they also export honey, neem oil and Baobab seed oil. ❖ The shea tree is resistant to annual bushfires, drought and harsh environmental and atmospheric conditions unlike other tree crops such as; cocoa, coffee, Rubber and the palm tree. 	<ul style="list-style-type: none"> ❖ The industry needs improvement in technology in order to increase output. The study revealed that most processing firms still used primitive ways of processing the butter. About 90% of the sampled firms use the semi-mechanized method with no firm having a fully mechanized set- up for production. ❖ Most of the processing firms are faced with the challenge of intermittent water supply. This affects the ability of shea butter processing centers to produce more butter during the dry season. ❖ Most processors do not have enough funds to procure more kernels during the peak season for processing during the lean season. Hence, they run out of kernels for processing during the lean season where it is more profitable to process because of scarcity of kernels. ❖ National and regional quantitative restrictions of vegetable fat use in chocolate products, restricts trade and growth of the shea industry. In 2003, the European Union Directive 2000/36/EC under Annex II identifies shea-butter as vegetable fat which can be used in the production of different chocolate products. However, Article 2, of the directive limits this use to only five percent. Thus, a product cannot be labelled as chocolate if vegetable fat exceeds this maximum. Also, the US restricts what chocolate products may include as vegetable fat. The Code of Federal Regulations Title 21, Part 163,112 restricts the use of vegetable fats other than cocoa in products labelled as <i>Cacao nib</i>, <i>Chocolate liquor</i>, <i>Breakfast Cocoa</i>, <i>Cocoa</i>, <i>Low fat cocoa</i>, <i>cocoa with dioctyl sodium</i> (Nieburg, 2014).

Opportunities	Threats
<ul style="list-style-type: none">❖ Shea and its products are increasingly demanded as food, and medicine, for cosmetics and other industrial uses both at the local and international market.❖ People are gradually shifting demand from conventional products to organic products of which shea butter has higher comparative advantage over cocoa as cocoa butter substitute (CBS) due to comparatively cheaper CBS.❖ The existing Cocoa Research Institute of Ghana (CRIG) in Bole and the University for Development Studies research findings on Shea are enough bases for further in-depth research to discover the full potentials of the industry.❖ Shea butter processing in Ghana has received substantial value addition. Some small and Medium scale enterprises such as Sekaf Ghana limited, Savannah Fruit Company, Tiehisuma processing center, Mandeeya and Yumzaa processing centers now produces products such as bath and beauty care products which continue to increase its market share at the international market (Field survey, 2018)❖ Several Financial institutions and other NGOs exist to organize women into solidarity groups and provide financial support such as grants and loans for.	<ul style="list-style-type: none">❖ Majority of butter processing firms are faced with inconsistent placement of orders from buyers. This does not encourage large scale production as butter which are not sold within few weeks after processing loses quality. In view of this, some processing firms such as Tuntieya Jisonayili and Sanga women processing centers which had halted processing at the time of the data collection indicated that it causes economic loss to them❖ Strict butter specifications from buyers makes processing difficult. Most institutional and individual buyers from the international market consistently demand that Shea butter producers supply butter which meet their specifications. Lack of uniform specification for Ghanaian butter by Ghana Standard Authority (GSA) therefore makes it difficult to meet different specifications. (https://www.graphic.com.gh/business/business-news/lack-of-certification-hampers-shea-butter-export.html)❖ High cost of organic butter certification and multiple certification requirements by different markets. The United State Department of Agriculture (USDA) has different certification requirement for organic butter from ECOCERT (an organic certification organization founded in France in 1991). These means that one can export organic butter to both the European and US markets after it has met requirements of both ECOCERT and USDA.❖ The small-scale women are gradually losing out of the industry because the industry is being transformed from principally local and women dominated industry to big investment injections with considerable sophistication by investors. Though this is an opportunity which would bring in more foreign currency into the country and create employment for resource persons however, the marginalized women who forms the majority in the shea butter business are gradually been displaced.

Result from Kendall's coefficient of concordance

Table 5 shows that, inadequate finance, intermittent water supply, lack of improved technology, poor government attention, Inconsistent placement of orders by buyers, low domestic patronage and uneven supply of shea kernels were the constraints that bedeviled the progress of the Shea butter sector in the Tamale, Ghana. The findings of this study support Pufaa (2010) who stated that, the challenges facing shea butter processors in the Northern Region are lack of capital or finances, inadequate equipment, inadequate water facilities, poor government attention and high cost of fuel for processing. This result also confirms the findings of Holzman (2004) who concluded that lack of finances is the major constraints facing most African developing industries.

However, the Kendall coefficient of concordance (W^a) test obtained from the analysis is 0.25. This indicates that, the overall unanimity among the respondents is weak hence there is no agreement among the respondents. In this case the constraint with the lowest mean rank cannot be said to be the most pressing constraint in the shea butter industry. This means that while inadequate finances may be the most pressing constraint in Kasalgu processing center, that may not be the case in Tiehisuma processing center. Hence different firms are faced with different pertinent (pressing) constraints.

Table 5: Ranking of constraints using Kendall's Coefficient of Concordance

Constraints	Mean Rank	Ranking
Inadequate finances	2.70	1 st
Erratic water supply	3.10	2 nd
Lack of improved technology	3.35	3 rd
Poor government attention	3.55	4 th
Inconsistent placement of orders	4.90	5 th
Low domestic patronage	4.95	6 th
Uneven Price of shea kernels	5.45	7 th
Kendall's $W^a = 0.248$; N= 20:	Df=6	
Chi-square statistic = 29.743	Sig= 0.000	

Source: Author's computation, 2018

Inadequate finance/Lack of access to credit

Ranking of the constraints among respondents revealed that inadequate finance was the most pressing challenge facing the butter producers. It was evident during the data collection as only 15% of the respondents revealed that they have ever received financial assistance from financial institutions and other non-governmental organizations. The rest either sourced credit from the informal sector (Village Savings and Loans VSLA) or resort to their own capital. The findings corroborate

with conclusions made by Adam & Abdulai (2016) on a study “the shea industry and rural livelihood among women in the Wa municipality”. In their study, they concluded that shea butter processing is constrained by limited access to investment capital and lack of modern processing equipment. Shea butter processing centers aside using self-collected kernels for processing, one has to supplement the self-collected kernels with purchase kernels which require funds to purchase enough kernels. Processors also need huge financial investment in order to purchase good but easy-to-use machines to reduce the drudgery from the processing. Garba *et al.*, (2012) espoused that supporting women in shea butter processing with microcredit would soar up production of quality butter to meet both international and domestic demand while earning substantial amount of income for the processors.

Intermittent water supply

Water remains one of the most invaluable assets in the processing of shea kernels into butter. Water is needed at every stage of the processing to produce quality butter. Most of the firms indicated that, huge volumes of water are needed especially during the kneading stage of the processing in order to facilitate the fatty extract (butter) to be extracted. Godfred *et al.*, (2015) indicated that shea butter processing requires the use of large quantities of water. They further pointed out More water was used in urban locations per unit quantity of raw material compared with the rural areas. The study found out that most of the processing firms do not have rain water collection system. This increases their cost of production as processing center resorts to buying water especially during the dry season for processing. Some processing centers also indicated that, sometimes the cost involved in purchasing water for processing exceeds the cost of procuring nuts for processing.

Lack of improved technology

Most of the processing firms still use rudimentary and primitive methods of processing the shea kernels into butter. From the survey, even though 90% of the sampled processing firms use the semi-mechanized method of processing. However, majority of these processing centers have only the grinding mills and the kneading machine. According to Addaquay (2004) shea butter processors who have both grinders and kneaders are said to be using the semi-mechanized method of processing. From the study, majority of processing firms lack basic or primary machines such as bridge press, hydraulic presser and nuts cracker required for efficient butter production. Consistent with this finding is Issahaku *et al.*, (2011) who reported that majority of rural women especially in northern Ghana are not using improved methods of shea butter processing despite their allocative efficiency. Al-hassan (2012) explained that, processors of shea nut are over dependent on the traditional method of shea nut processing which affects quality and hence faces a challenge of market access.

Poor government attention on the industry

Despite the involvement of government of Ghana in the shea industry during the early 1920s which led to promulgation of several policies such as: the law enacted in 1973 to place both internal and external marketing and research on shea under the monopolistic control of Ghana Cocoa Marketing Board (GCMB) alongside cocoa, cola and coffee, enough has not been done on the shea industry as compared to the cocoa (Yidana, 2009).

According to report from SNG Ghana, government in 2015 inaugurated a shea committee with an initial capital of GhC5million to develop the industry. This included planting some 2 million shea trees in the Northern, Upper East, and Upper West regions of Ghana along with the construction of 12 shea nut processing plants. As part of it, 1000 women were to be trained to also form a pivot for the shea value chain. However, recent checks in the three regions indicated that none of these initiatives have been carried out.

Inconsistent placement of orders

The study also noted that most processing firms produce base on the demand they receive from either individual or institutional buyers from the international market. Firms such as Sekaf Ghana limited and Savana Fruits Company (SFC) indicated that they have foreign buyers who place a demand and they produce base on the demand from these buyers. Butter production is obstructed and brought to a halt in the event that they do not have demand from their buyers most especially from the international buyers. It was observed that some of the processing centers especially the Tuntieya processing center (Jisonayilli) was not processing. An interview with the secretary of the center revealed that previous demand has been supplied. She indicated that since they do not have any outstanding demand, there was no need producing.

Low domestic patronage/demand

One of the many constraints of the shea butter industry within the Tamale metropolis identified through this study is the relatively low domestic demand of shea butter produce. Due to the absence of local industries that adds value to the shea butter; it is not demanded in commercial quantities in Ghana unlike in the European and United States (US) markets. Most of the local demand of shea butter comes from those who produce soap and individual demand on a small scale.

Uneven price of shea kernels

Despite the enormous contribution of the shea processing industry to the alleviate poverty and improve livelihood among shea butter processors, the study revealed that the shea butter market in Ghana is not structured with many middlemen. As such, prices of the shea kernels fluctuate throughout the year especially during the lean season. The two major shea markets (the international and local) are in conflicts due to the upsurge in shea kernel exportation by the international market. This has caused a lot of market shocks to the local market. An interview with some shea butter processors indicated that export of large volumes of shea kernels by some individuals and organization has contributes to high cost of kernels for local shea butter production. According to Lovett, (2004) dried kernels have been exported to processing countries in Europe, Japan, and India where shea butter is extracted in large-scale industrial plants causing a demand-pull inflation on dried shea kernels.

Conclusion and Recommendations

SWOT analysis of the Shea industry revealed that despite some challenges, the industry has a huge potential for improving livelihood of butter processors and promoting economic growth and development through its income and employment potentials. Also, the increasing demand for locally produce butter at the international market was identified as a potential. Challenges such as inadequate

finances; Intermittent water supply; lack of modern/improved technology; poor government attention to the industry's development; Irregular/inconsistent demand from international buyers; low domestic patronage and usage and uneven price of Shea kernel have stalled realization of the full potentials of the industry. Base on the findings of the study, the following recommendations have been made to stakeholders, development partners and Non-governmental organizations for consideration. Government should provide a clear-cut policy framework targeted at increasing the income generating ability of local processors and increasing the export base of shea butter by reducing the high cost of certification of organic butter. Also, government should partner with research institutions and other corporate bodies to educate local nut pickers and processors to embark on shea plantations through artificial propagation since it takes only 7 years for the artificially propagated shea tree to mature and fruit. Besides, Tamale metropolitan assembly can collaborate with NGOs such as Care international and Global Shea Alliance to adopt Care's Village Savings and Loans Association (VSLA) model for implementation to help raise investment capital for local processors since inadequate finance was a challenge. In a nutshell, shea butter processing groups should be encouraged to add value to the locally produced butter in order to enjoy higher premiums for value added products.

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