ASSESSMENT OF PROCESSORS AND MARKETERS OF SHEABUTTER (*VITELLARIA PARADOXA C. F. GAERTN.*) IN ZURU LOCAL GOVERNMENT AREA, KEBBI STATE, NIGERIA

Senchi A. A[1]. and Yakubu A. A.[2]

1 Department of Forestry and Fisheries. Faculty of Agriculture, Usmanu Danfodiyo University, Sokoto. Nigeria
2 Department of Agricultural Economics. Faculty of Agriculture, Usmanu Danfodiyo University, Sokoto. Nigeria

Email: *aishasenchi07@gmail.com* and *aayakubu13@gmail.com*

ABSTRACT

The study examined the processing and marketing of Shea butter in Zuru Local Government Area of Kebbi State, Nigeria to identify the socioeconomic characteristics of Shea butter processors and marketers, the average cost and return of Shea butter processors and marketers and the determinant variables of profitability among the Shea butter processors. The study covered five District Areas of Dabai, Manga, Rafin Zuru, Rikoto and Senchi. Four villages from each of the districts were purposively selected. Four respondents were randomly selected from each of the villages giving a total sample size of 80 respondents while structured questionnaires were administered and retrieved. The data collected were analysed using simple descriptive statistics, profitability and multiple regression analysis. The results of the study indicated that, average age of Shea butter processors and marketers was 45years with 71.2% married. Majority of the respondents (68.8%) had a family size of 1-10 members, while 43.7% of Shea butter processors and marketers had attained at least one form of formal education or the other. About 46.3% of Shea butter processors made ₦1 – ₦300 profit per week. The total profit made by the processors and marketers of Shea butter were ₦33,150.00 and ₦41,130.00 respectively, while the average profit made were ₦414.38 and ₦514.13 per week. Rate of return in Shea butter business is 30.19. The benefit cost ratio is 1.30, indicating that revenue from the business is able to cover the total cost. The regression co-efficient with respect to the variables used had a very low co-efficient of multiple determination R^2 (0.243). The major problems of Shea butter processors in the study area include long time processing, inadequate capital and transportation cost. Since Shea butter business is profitable; women in the rural areas should therefore be encouraged by the Local, State and Federal Government to enhance their enterprise.

Key Words: Shea butter, Non-timber Forest Products, Processors, Marketing

INTRODUCTION

Sheabutter is part of forest resources known as non-timber forest products (NTFPs). *Vitellaria paradoxa is called Kadanya in Hausa* language. Shabutter tree as local name (Kadanya) is indigenous to Sub-Saharan Africa and belongs to the family *Sapotaceae*. It grows in the wild and has a huge economic and ecological potential. Shea butter tree grows in some parts of Africa, from Senegal, Uganda to

Nigeria. The tree is multi-purpose and is highly valued not only for the economic and dietary value of the cooking oil, but also for the fruit pulp, bark, roots and leaves, which are used in traditional medicines. The wood and charcoal, is used for building and fuelwood (Sheini and Donkor, 2000). Sheabutter is naturally rich in Vitamins A, E, K and F (Okullo *et al*, 2010). Shea butter is widely utilized for domestic purposes such as cooking, skin moisturizer and commercially as an ingredient in cosmetic, pharmaceutical and edible products (Alander, 2004). The fruit when very ripe can be eaten raw. Traditionally, Shea butter are used as cream for dressing hair, protecting skin from extreme weather and sun, relieving rheumatic and joint pains, healing wounds/swelling/bruising, and massaging pregnant women and children. It is also used in treatments of eczema, rashes, burns, ulcers and dermatitis (Lovett, 2004). Sheabutter is in high demand in the advanced nations particularly in the USA. This butter is preferred to animal fats because it is free of any infection associated with fat from cattle or birds (BCFAN, 2010). It is a good alternative to petroleum wax which dominates body creams as the basal support for the active ingredient. It is therefore an unguent (healing ointment) for the skin (BCFAN, 2010).

Despite the economic importance of sheabutter, a lot of it tends to be wasted during the traditional method of producing and processing which is extremely labour intensive. Apart from the huge and wide usage, sheabutter being processed in Nigeria is characterized by low quality and quantity. The inefficiency of the processing techniques lowers the quantity of sheabutter available in the market. Sheabutter processing in West Africa involves minimum mechanical input, heavy drudgery and high input of firewood, which has a direct effect on the quality of sheabutter (Carette *et al*, 2009). The low quality of sheabutter is thus a concern, as it falls below international standard. Consequently, demand is decreasing and the potentials of sheabutter in alleviating rural poverty is dwindling, for sustainable development, this data will serve as base-line information for future researchers. The major objective of this paper is to examine the processing and marketing of sheabutter in Zuru Local Government Area of Kebbi State.

Materials and Methods

Study Area

The study was conducted in Zuru Local Government Area of Kebbi State. It is one of the twenty one (21) Local Government Areas of Kebbi State. It is located within latitudes $11^{o}35'$ to 11^{o} $55'$N and longitudes 4^{o} $45'$ to 5^{o} $25'$ E of the equator (KBSG, 2003), at the extreme south eastern part of Kebbi State and covers an area of approximately 32, 626 square

kilometer. This location is on a hilly terrain and is bordered in the north by Gummi Local Government Area of Zamfara State, to the Northwest by Fakai Local Government Area, to the Southwest by Yauri Local Government Area, to the Northeast by Sakaba Local Government Area and to the South by Rijau Local Government Area of Niger State (Girma, 1998).

The climate is marked by rainy season and long dry season. The average rainfall is 1025mm/annum, falling between May to October which last for about 4 - 5 months a year. The climatic condition of the area is characterized by hot and wet season as in the tropical areas with the months of November to January as harmattan period. Annual temperature ranges between 35^{o}C to 39^{o}C. The vegetation is Sudan savanna with predominance of trees such as *Parkia biglobosa*, *Vitellaria paradoxa*,, *Adansonia digitata* and *Balanites aegyptiaca* shrubs like *Anona senegalensis*, *Gaudenia senegalensis* and *Guira senegalensis* and grasses like *Andropogan gayanus*, *Cymbopogon gayanus*, *Striger spp*, etc in the area. Zuru Local Government Area is one of the areas where sheabutter forms part of the large number of trees, the production and processing of sheabutter is one of term activities engaged by the inhabitant of the area. Soil type is sandy loam and rich in nutrients which makes it suitable for agriculture (KBSG, 2003).

Sampling Design

The research covered five districts of Zuru L. G. A; Dabai, Rikoto, Manga, Senchi and Rafin-Zuru. Four (4) villages from five district areas were purposively selected based on the concentration of processors and existence of sheabutter markets. The target population of the studies is sheabutter processors and marketers. The study covers five district areas of Dabai, Manga, Rafin Zuru, Rikoto and Senchi. Four respondents were randomly selected from each of the villages giving a total sample size of 80 respondents while structured questionnaire were administered and retrieved. Data were collected through the use of structured questionnaire and oral interview especially with respondents who are not literate enough to complete the questionnaires. Data were collected on Socio-economic characteristics which include tribe, age, marital, status, house-hold size, educational level, primary/secondary occupation, years of experience. Information on the inputs and outputs of sheabutter processing and marketing were also collected. Data collected were subjected to descriptive and inferential statistics. Frequency and Percentages were used on the socio-economic characteristics, profit analysis (Net profit, rate of return and benefit cost ratio) were used to

examine the cost and return of the processors and marketers of sheabutter in the area. Regression analysis was used to examine determinants of profitability among the processors and marketers of sheabutter.

Specification of models:

- $\pi = TR - (TFC + TVC)$…….(1)

Where:

π = Net Profit

TR = Total Revenue

TFC = Total Fixed Cost

TVC = Total Variable Cost

Rate of return:

- $ROR = \frac{\pi}{TC} \times 100$ ….(2)

Where:

ROR = Rate of Return

π = Net Profit

TC = Total Cost

Benefit cost ratio:

- $BCR = \frac{TR}{TC}$ ……..…(3)

Where:

BCR = Benefit Cost Ratio

TR = Total Revenue

TC = Total Cost

Linear regression model:

- $Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + \text{----------} b_9X_9 + e$ …(4)

Where:

Y = Profit of producers (₦)

X_1 = Age in years

X_2 = Marital status (1 if married, 0 for others)

X_3 = Household size

X_4 = Educational status

X_5 = Occupation (1 if honey or sheabutter, 0 for others)

X_6 = Years of experience

X_7 = Fuel wood cost (₦)

X_8 = Extraction/Processing cost (₦)

X_9 = Transport cost (₦)

e = Error term.

RESULTS AND DISCUSSION

Socio – Economic Characteristics of Respondents

Personal characteristics of respondents are important human attributes that play a significant role in the processing and marketing of sheabutter. The variables include gender (sex), age, marital status, level of education attain and occupation (primary and secondary) of the processors and marketers of sheabutter

Table 1: Socio – economic characteristics of sheabutter processors and marketers (80)

Characteristics	Frequency	Percentage
Gender		
Male	0	0.0
Female	80	100.0
Age (years)		
20 – 29	23	28.6
30 – 39	19	23.8
40 – 49	26	32.5
50 – 59	9	11.3
60 and above	3	3.8
Marital Status		
Single	12	15.0
Married	57	71.2
Divorced	3	3.8
Widow	8	10.0
Household Size		
1 – 10	55	68.8
11 – 20	21	26.2
21 – 30	4	5.0
Educational Status		
Quranic education	21	26.3
Adult education	5	6.2
Primary education	15	18.8
Secondary education	13	16.2
Tertiary education	2	2.5
No basic education	24	30.0
Occupation		
Primary		
Processing	79	98.8
Civil service	1	1.2
Secondary		
Farming	72	90.0
Tailoring	5	6.3
Petty trading	2	2.5
Civil service	1	1.2
Total	**80**	**100**

Source: Field Survey, 2011/2012

Gender

The results from table (1) indicated eighty (80) women representing 100% were involved in shea butter production and marketing. Records over the years have not shown any involvement of men in the sheabutter business from nut collection, processing and marketing of the products in the area.

Age

The results indicated that 52.4% of the sheabutter producers and marketers fall between the age group of 20 and 39 years, while 32.5% of sheabutter respondents fall between the age group of 40 and 49 years. These categories are predominately women activities and results have shown that both young women and old women have also dominated in the business of processing and marketing of sheabutter. These findings showed that most of sheabutter respondents were within the active labour force, younger individual participated more than older individuals. This was supported by Ogungbile *et. al.*, (2002) who asserted that younger respondents are more likely to adopt an innovation than older respondents because of better education and more exposure to new ideas.

Marital Status

The results showed that 57 respondents representing the majority (71.2%) in the study area were married, while only 3 women were divorced (3.8%). This means that, married individuals are more committed to their responsibilities and work very hard to earn their living. This agrees with Olarinde *et. al.,* (2008) who reported that one of the most important factors that determines efficiency of a business is the marital status of an individual. This is because married people worked hard in order to meet up with the demand of the family members.

Household Size

The results showed that 68.8% of the respondents had household size of 1 - 10 persons, while 5.0% of sheabutter respondents had household size of between 21 - 30 persons. With respect to labour, these findings could mean that there was readily available family labour thereby reducing the cost of hired labour in their business. Other studies have indicated that larger family sizes are expected to enable farmers to take up labour intensive activities (Anley *et al.*, 2007).

Educational Status

It was evident from the result that 30.0% of the sheabutter producers and marketers had no formal education. The implication of those that had no formal education in sheabutter business is that, it would be difficult for them to adopt modern techniques, innovation or new ideas in their business. Most of the respondents have attained and obtained one form of education as this will help them in adopting any technology

introduced to them. This was supported by Farinde *et al.* (2005) who reported that education influences the adoption of new innovations, ideas or techniques in business operations they also revealed that education is positively related to the adoption of innovation.

Main Occupation

The results showed that 98.8% of the respondents indicated that sheabutter processing and marketing is their primary activity (during dry season). The availability of the shea nuts for sheabutter processing (that is, peak period) is during the rainy season. The implication is that during the rainy season the labour force is diverted to farming activities and this will affect their sheabutter business. Especially for women who are participating in family food production during the rainy season, (table 1).

Costs and return analysis of sheabutter producers and marketers Table 2 indicated that processing (labour) among the variable cost had the highest contribution (73.43%) to the cost of processing. This finding agreed with that of Ibrahim *et al,* (2010) who obtained 65.11% of labour in his sheabutter research at Minna, Niger state. The results revealed that fixed cost items (pots) contributed 36.17% which was the second highest. Fuel wood and calabash had 13.01% and 19.94% contribution among the variable and fixed items in the processing of sheabutter in the study area. Total variable cost constituted the highest percentage (62.55%) than the total fixed cost (37.45%) in the production of sheabutter. The implication of this is that, in the short run the highest contribution from the variable cost may lead to low profit; this could also be associated with the traditional method used in processing the sheabutter in the study area which was more labour intensive. The net profit of ₦33,150.00 per week was earned in the production of sheabutter, this indicated that the enterprise was profitable.

Table 2: Average costs and return of sheabutter processors per week.

Cost Items	Amount (₦)	Average cost	Return	Percentage Cost
Variable costs				
Collection cost	9710.00	116.50	-	13.56
Fuel wood	9320.00	121.38	-	13.01
Processing (Labour)	52600.00	657.50	-	73.43
Transport to market	16630.00	207.89	-	-
Total variable cost of processing (TVC)	71630.00	895.38	-	100
Percentage TVC				62.55
Fixed costs				
Pots	15510.00	193.88	-	36.17
Bowls	9660.00	120.75	-	22.53
Buckets	9160.00	114.50	-	21.26
Calabash	8550.00	106.88	-	19.94
Total fixed cost of processing (TFC)	42880.00	536.00	-	99.90
Percentage TFC				37.45
Total cost of production	114510.00	1431.38	-	100
Total revenue (TR) of processing	147660.00	-	1845.75	-
Net profit of processing	33150.00	-	414.38	-
ROR	2415.11	-	30.189	-
BCR	104.15	-	1.302	-

Source: Field Survey, 2011/2012

Table 3: Average costs and return of sheabutter marketers per week.

Cost Items	Amount (₦)	Average cost	Return	Percentage Cost
Variable costs				
Collection cost	9710.00	116.50	-	11.00
Fuel wood	9320.00	121.38	-	10.56
Processing (Labour)	52600.00	657.50	-	59.60
Transport to market	16630.00	207.89	-	18.84
Market Total variable cost	88260.00	1103.25	-	100.00
Market Total revenue (TR)	129390.00	-	1617.38	-
Market Net profit	41130.00	-	514.13	-

Source: Field Survey, 2011/2012

The findings in table (3) indicated that marketing/processing (labour) among the variable cost items had the highest contribution (59.60%) to the cost of marketing. The results also revealed that transportation cost had contributed second highest (18.84%). The net profit of ₦41130.00 earned in the marketing of sheabutter was higher (₦34,722.73) than that obtained from Ibrahim *et al,* (2010) in his sheabutter research at Minna, Niger state. This indicated that it was profitable and has great potentials for increasing the income of rural women.

Profits determinants among sheabutter processors

The results of linear regression in Table 3 indicated that the co-efficient of multiple determinations (R^2) was very low (0.243) implying that, only 24% of the variations in the profit of the sheabutter producers was well explained by the explanatory variables included in the model. The remaining 76% variables are attributed to the error or random disturbance in

the model, indicating that, there may be other variables that need to be included in the model, which were not captured from the study in the model, if included, could improve the R^2 higher level. This could also be so due to the fact that the enterprise is partially economic good. The F-value (2.491) is significant at 5% level. This implied that the inputs used in the production of sheabutter contributed to the profit of the sheabutter processors. The results also revealed that the co-efficient of the constant was positive (284.202), while the regression coefficients with respect to the household size, education and occupation (12.996, 0.515 and 342.842) were also positive but not significant. This implies that these variables though with positive coefficient values have no significant effect in determining the profitability of the sheabutter processors. The contribution between these variables with profit in the sheabutter business is very weak, that is these variables are not contributing much to the profits among the sheabutter processors. Fuel wood has positive co-efficient (1.448) and was significant at 10% level.

Table 4: Regression analysis of the profits determinants among sheabutter processors.

Variable	Regression Co-efficient (β)	Standard Error	t. value	F Value	R^2	Adjusted R^2
Constant (a)	284.202	415.926	0.683^{ns}	2.491**	0.243	0.145
Age	-1.959	5.564	-0.352^{ns}			
Marital Status	-40.632	95.114	-0.427^{ns}			
Household Size	12.996	8.999	1.444^{ns}			
Education	0.515	10.149	0.051^{ns}			
Occupation	342.842	360.466	0.951^{ns}			
Years of Experience	-50.660	28.559	-0.774*			
Fuelwood	1.448	0.862	1.681*			
Processing	-0.088	0.431	-0.205^{ns}			
Transport Cost	-0.403	0.127	-3.179***			

Source: Field Survey, 2011/12

However, age, marital status and processing cost have negative regression coefficient values (-1.96, -40.63 and -0.09) and are not significant, indicating that any increase of additional units in the use of these variables holding others constant would decrease the profit of the sheabutter processors by the proportion corresponding to their regression coefficients. Years of experience and transportation costs have negative regression coefficient (-50.66 and -0.40) but were significant at 10% and 1% respectively. This implied that the variables have contributed to the processing of sheabutter; this could be a situation where by the increase in the profit of sheabutter as a result of the use of these variables was at a reduced rate

Table 5: Problems encountered by sheabutter processors and marketers

Problems	**Frequency**	**Percentage**
Long time process/transportation cost	40	42.1
Strong wind	3	3.2
Presence of tobacco leaves and salt in the grinded shea nuts	4	4.2
Fuel wood problem	2	2.1
Hot weather affect the sheabutter through melting	5	5.3
Scarcity of the shea nuts	4	4.2
Transportation problems	2	2.1
Poor government investment in the production of sheabutter /Inadequate shea nuts grinding machine	4	4.2
Lack of capital	29	30.5
Deforestation problems	2	2.1
Total	**95***	**100.0**

***Multiple Response**

Source: Field Survey, 2011/12

The results revealed that 42.1% of the respondents mentioned hard labour and long time process as important constraints in their locality; this is due to the old traditional method used in the processing of the sheabutter from the shea nuts. 2.1% of the respondents revealed that fuel wood, transportation and deforestation were their major problems. Many roads in the study area were in the state of disrepair, the shea trees produce best quality charcoal as such alot of people are more concern in producing quality charcoal in most part of the areas. The implication of deforestation is that, it would lead the shea trees to extinction; with afforestation programmes the shea trees would be safe from the danger of being extinct. The results also showed that 30.5% of the respondents indicated capital as their major problem. Lack of capital could be due to lack of financial institutions that would aid in granting loan to the prospective sheabutter processors and marketers in the area.

CONCLUSION

From the findings, the study established that, sheabutter processing and marketing is a profitable business in the study area. Sheabutter business generated little profit. This could be because sheabutter producers were using old traditional method of production which is labourious. Problems: like transportation cost, lack of capital and labour intensive were identified that require infrastructural development and government attention.

RECOMMENDATIOS

Based on the findings of this study, the following recommendations were made;

1. Women in the rural areas should be encouraged by the local, state and federal government to go into sheabutter business as a means of reducing poverty in rural areas.
2. Sheabutter processors and marketers should form co-operative society so as to enable them access loans to boost their business.
3. Sheabutter processing should be adopted by both governments and NGOs as a poverty alleviation initiative, given its enormous potentials locally and internationally.

REFERENCES

Alander, J. 2004. Shea butter – a multifunctional ingredient for food and cosmetics. *Lipid Technology*, 16(9): 202–205

http://www.ejbss.com/Data/Sites/1/octoberissue/ejbss-12-1157-assessmentofsheabutter.pdf. 21/11/2013 4:15pm.

Anley, Y., A. Bogale and A. Haile-Gabriel (2007). Adoption decision and use intensity of soil and water conservation measures by small holder subsistence farms in Debo district, Western Ethiopia. Cited in Hassan .R. and .C. Nhemachena (2008). Determinants of African farmers' strategies for adapting to climate change: Multinomial choice analysis. AfJARE. 2 (1):83-104.

Bio-oil Crops Farmers Association of Nigeria (BCFAN). (2010). *Recommended Selected Priority Bio-oil seed Plantation Development in the Northern States.* Pp 11-12.

Carette, C., M. Malotaux, M. Leeuwen and M. Tolkamp, 2009. *Shea nut and butter in Ghana opportunities and constraints for local processing*. Hans Eenhoorn and Resilience Foundation. pp: 6 8. *http://www.resilience-foundation.nl/docs/Shea.pdf. 12/12/2013* 2:30pm.

Farinde, A. J., K. O. Soyebo, and M. O. Oyedekun, (2005). Exploration of beekeeping as a coping strategy in a deregulated economy. *Journal of Agricultural Extension*, 8:76-83.

Girma, S. A. (1998). Agro-climatology of Millet Production in Desert Fringe Zone of Nigeria. A Case Study of Kebbi State. Unpublished M. Sc. Thesis, Federal University of Technology Minna, Niger State.

Ibrahim, M., O. B. Adeniji, R. S. Olaleye, and I. S. Umar, (2010). An Assessment of Sheabutter Processing Among Rural Women in Niger State. *NAAE:* Pp 275 – 279.

Kebbi State Government. (2003). Kebbi State Government Official Diary. Directorate of Infromation, Kebbi, Nigeria. pp. 7-10.

Lovett, P. N. (2004). The Sheabutter Value Chain. Production, Transformation and Marketing in West Africa. *Wath Technical Report No. 2.*

Ogungbile, A. O., R. Tabo, and S. A. Rahman, (2002). Factors Affecting the Adoption of ICSVIII and ICSV400 Sorghum varieties in Guinea and Sudan Savanna of Nigeria. The *plant Scientist,* 3: 21-32.

Okullo, J.B.L., Omujal, F., Agea, J.G., Vuzi, P.C., Namutebi, A., Okello, J.B.A. and S.A. Nyanzi. 2010. Physico-chemical characteristics of Shea butter (Vitellaria paradoxa C.F. Gaertn.) oil from the Shea districts of Uganda. *Africa Jounal of Food, Agriculture and Nutrition Development, 10:2070-2084. http://www.ejbss.com/Data/Sites/1/octoberissue/ejbss-12-1157-assessmentofsheabutter.pdf. 27/11/2013 4:15pm.*

Olarinde, L. O., A. O. Ajao, and S. O. Okunola, (2008). Determinants of technical efficiency in beekeeping farms in Oyo State, Nigeria. A Stochastic frontier approach. *Research Journal of Agriculture and Biological Science*, 4(1): 65 - 69

Sheini, M. A. and P. Donkor. (2000). Shea Butter Extraction Technology and Marketing Appraisal Mission to Northern Ghana and Burkina Faso, (GRESDA) UNIFEM Project.