

Job Incentives For Rural Women In Nigeria: An Appraisal Of The Shea-Butter Extraction Option

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Abstract

This study examined the viability of women livelihoods that is dependent on Shea butter extraction activities in Nigeria, using Kwara State as a case study. Specifically, the study examined Shea- butter extraction practices and facilities, costs and returns structure to Shea-butter extraction, factors affecting Shea- butter extraction and determinants of investments in Shea- butter extraction activities. For the study One hundred and twenty women households involved in Shea-butter processing were surveyed across the study area, Kwara State. Data collected was analysed using the descriptive statistics, partial budget analysis and regression Analyses. Results revealed that most women involved in Shea butter extraction activities were married and agile youths. Some of the women undertook Shea butter extraction activities as a minor occupation while about half of them undertook the activities as their major occupation. Most of them were also members of cooperatives in their localities. Cost and returns analysis showed that the average gross revenue recorded in the study area is N776.58 per kilogram of processed Shea-nut. Total cost is N521.50 while the net income is N255.08. Returns to labour and management (RLM) is N86.18). Labour used, years of involvement in extraction and the quantity of Shea fruits processed were revealed as contributors to Shea butter output while years of formal education was shown to be an insignificant contributors. Constraints limiting Shea butter activities were shown to include inadequate capital, poor packaging and market, low domestic consumption/patronage of Shea-butter products, insufficient supply of water as well as high cost of equipment maintenance. The study therefore calls for sourcing of better market, provision of crucial social amenities including banks and micro-finance and the need for women to mobilise and collate rural funds via cooperatives.

Key Words: *viability, average gross revenue, Returns to labour and management (RLM), Total cost*

1.0 Introduction

The Shea tree, formerly *Butyrospermum paradoxum* is now called '*Vitellaria paradoxa*'. Many vernacular names are used for the Shea tree. The *Vitellaria* name is a reflection of the crop's

extensive range of occurrence nearly 5,000km from west to east across the African continent. The nomenclature history and synonymy of the Shea tree followed a very tortuous evolution. The oldest specimen was first collected by Mungo Park, on May 26, 1797, before eventually arriving at the name *Vitellaria* with sub species *paradoxa* and *nilotica*. In his journals, Park described the local trade in Shea products as a vibrant inland commercial activity and since that time agricultural officers posted to Africa have made detailed notes of the local trade in Shea nuts, butter, oil, cake and latex and also speculated on its export trade potential. By the 1920s, a flourishing trade was developing between West Africa and Europe where the butter was used in making vegetable margarine and candles. However, changing agricultural policies in Europe and new product formulations led to a decline in demand for Shea and in many respects Shea now falls into the “Cinderella” crop category.

The Shea tree has a great untapped capacity for producing copious amounts of sap. The sap constitutes an important source of raw material for gum and rubber industry. The Shea fruit is sweet, it is green in color and has a fleshy edible pulp which contains 0.7 -1.3g of protein and 41.2g of carbohydrate. The fruit pulp is particularly a rich source of Ascorbic acid. The Shea fruit is also an important source of food for many organisms, including birds and bats. In Nigeria, Shea-butter extraction is a lucrative business especially in rural areas where the Shea trees thrive. (*Daniel et al, 2005*).

Shea- butter has played an important part in local economies in west and central sub-Saharan Africa. It is reported that the initial traditional roles of Shea have not changed significantly. Since 1830, when the French explorer Roger Caillie describe them during his trek across West Africa. In Roger Caillie’s own word in Hall et al, (1996),”the indigenous people trade with it, they eat it and rub their bodies with it. Shea-butter is also burnt to make light and it is a very beneficial remedy against aches and pains.

In recent times, the Shea- butter produces the second most important oil crop in Africa after oil palm. This is made possible as the tree grows in areas unsuitable for palms; it takes on primary importance in West Africa and in regions where annual precipitation is less than 100mm

of rainfall (Eromosele et al, 1994). In the ancient Egypt, the funeral beds of early kings were carved in wood of old Shea trees. Shea butter is also employed for the following;

- in the manufacture of chocolate Boffa *et al*, (2000) and pastries due to its close similarity to cocoa butter FAO, (1988).
- To protect the human skin and hair against heat from sunlight.
- The local healers used Shea-butter to treat rheumatism, muscle and joint pains .Boffa,(1999)
- As an insect repellent, to relieve nasal congestion, reduce body odour and to protect dog's skin and paws from the effect of sands and salt Badifu, (1989)
- Pregnant women rub Shea-butter on their swollen abdomen so as to nourish it. It also helps prevent harsh skin, chapping rashes, eczema, and dermatitis conditions
- It helps aging soft tissue to firm up, it also rejuvenates skin cells and skin pores.
- In the pharmaceutical and cosmetic industries, Shea butter is used as an important raw material and precursor for the manufacture of soaps, candles and cosmetics (de Saint Sauveur, 1999). It is also used as a sedative for the treatment of sprain and dislocations. Boffa,(1999).
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- Other important uses of Shea- butter include, as an anti-microbial agent for healing of wounds, as a pan-releasing agent in baking and as a lubricant for donkey carts. The Shea butter extraction by-products including the brown solid and hard are used as water proof material on the walls of mud buildings (Booth and Wickens, 1988) and even for bee hives Marchand, (1988).

1.1 Problem Statement

In recent years, the Shea tree has gained importance as an economic crop. This is sequel to the heavy demand for the Shea fruit butter, both locally and internationally (Boffa *et al*, 2000). Shea butter which is a staple food (Vegetable oil) in West Africa also serve as luxury product used as raw material in many industries like food industries, pharmaceuticals as well as for other

purposes. However, Shea butter as an economic commodity has not been given its pride of place in Nigeria.

However nowadays Shea is no longer a mainstream industrial product. Despite interest by Governments and FAO expert panels to develop local industries on Shea, no attempts have been made to domesticate the crop and essentially Shea remains a wild fruit that is seasonally gathered by the local community.

The study quest was to therefore to provide answers to research questions as below;

- ❖ What is the nature of shea-butter extraction practices and facilities in the savanna?
- ❖ What benefits or otherwise accrue to the shea-butter extraction activities?
- ❖ What are the problems faced in the extraction activities?
- ❖ What are the determinants/stimulants of investment into shea butter extraction activities?

1.2 Objective of the Study

The broad objective of this study is to examine Shea-butter extraction in Nigeria using Kwara- state as a case study. The specific objectives were to;

The broad objective of this study is to examine Shea- butter extraction in Nigeria, using Kwara State as a case study. The specific objectives were to;

- Examine the socio-economic Characteristic of Shea- butter extraction.
- Examine the Shea- butter extractinon practices and facilitaiies in the study Area.
- Investigate the cost and return structure to Shea- butter extraction.
- Determine factors affecting Shea- butter extraction.
- Identify the determinants of investments in Shea- butter extraction activities.

1.3 Justification of the Study

The study stands to provide information for current and prospective Shea-butter extractors. It will also enable them identify factors/variables that influence Shea-butter extraction in the country, thereby serving as pathways to knowing how these factors/variables could be better managed to improve and sustain the shea-butter business. The study could also serve as a source of relevant information to other countries facing similar situations

2.0 Study Area and Data

The study was conducted in Kwara-state, Nigeria. This study was conducted in Kwara State, Nigeria. Kwara State lies between latitudes $7^{\circ} 45' N$ and $9^{\circ}30'N$ and longitudes $2^{\circ}30'E$ and $6^{\circ} 25'E$. The State covers a total land area of about 332,500 square kilometers and shares boundary with Ondo, Oyo, Osun, Niger and Kogi States in Nigeria and an international border with the Republic of Benin along its north-western part. The state has two main climatic seasons; the dry and wet seasons. The natural vegetation of the state comprises of the wooded and rain forest savannah.

Agriculture is the main study of the state's economy. Principal cash crops produced in the state are kola nuts, tobacco leaves, beniseed and palm produce. Shea-butter extraction activities are carried out across all the local government areas of kwara state. However, Shea-Butter activities are popular in Moro local government area of the state. Moro local government area (LGA) land mass area of about 3,304 square kilometer which is occupied by 86,939 occupants (NPC, 1991). Moro enjoys two climatic seasons annually i.e. raining season which begins in march and end in the month of September, while Harmattan begins in the month of December and January .the vegetation of the area belong to the northern guinea savannah woodland and tall grasses. The minimum average temperature ranges between $21^{\circ} C$ and $25^{\circ} C$ while the maximum average temperature is between $30^{\circ} C$ and $35^{\circ} C$. Predominantly, people of the area are peasant farmers .Crops grown by farmers in Moro include yam , Maize , Guinea corn, Rice, Beans, Cassava, Groundnut, Vegetables, Sweet potatoes. The economic trees in Moro include locust beans and Shea-butter trees. Adeleye, (2004).

In Moro, some of the major towns where Shea-butter extraction activities is most popular are Agbaku-eji, Megida, Odentan, Okutala, Amu, Onile-aro.in the town, those involved in Shea-butter are all women. In 2006, the federal government of Nigeria procured and situated three different machines to Agbaku-eji in order to improve the processes involved in Shea-butter extraction.

The target population for this study is households involved in Shea-butter extraction activities in Kwara state, Nigeria. The study sampling technique therefore involves a one stage random selection of households involved in Shea-butter extraction activities across six communities in Moro LGA. One hundred and twenty households involved in Shea-butter processing were surveyed across the communities selected. These respondents were interviewed for the study.

2.1 Methods of Data Analysis

To achieve the stated objectives of the study, the descriptive, budgeting and regression analyses tools were used to analyze the study data gathered. Descriptive statistical tools were used to examine the socio-economic characteristics of Shea-butter extractors as well as the Shea-butter extraction practices of the households. The other tools are discussed as follows

Gross Margin Analysis

To investigate cost and returns structure to Shea-butter extraction in the study area, the gross margin analysis was employed. Gross margin analysis was further employed to derive returns to farmer's labor and management (RLM). The gross margin analysis is outlined thus.

$$\text{GR-TVC}=\text{GM}..... (1)$$

$$\text{RLM}=\text{GM}- (\text{R}_i+\text{D}_i+\text{I}_a) (2)$$

Where, GR= gross value of output, TVC= Total variable cost, GM=Gross margin, RLM= Returns to farmers labour and management, R_i =Imputed rent on land, L_a =Imputed cost of family labour and D_i =Depreciation

Regression analysis

The regression tool measures the amount of variability of a dependent variable that can be explained by independent variables. The variable regression coefficients indicates the amount of change that will be observed in the value of the dependent variable if the independent variables are altered .The tool was therefore used to identify factors that affect the Shea-butter extraction activities. The implicit model used for the analysis is specified as equation (3).

$$Y=f(X_1, X_2, X_3, X_4, X_5, U) \dots\dots\dots(3)$$

Where Y=quantity of Shea-butter extracted in kilograms, X_1 =number of Man hours used for extraction, X_2 = respondents years of formal schooling, X_3 = years involved in shea-butter extraction, X_4 = type of extraction method, X_5 = quantity of Shea fruits processed and U_i = error term

3.0 Results and Discussion

Socio-economic Characteristics of Respondents

The socio-economic characteristics of respondents are presented in Table 1.

Table 1: Socio-economic Characteristics of Respondents

characteristics	Frequency	Percentage (%)
Age in years		
1-20	15	10.0
21-40	58	30.5
41-60	38	50.5
61-80	12	70.5
Total	120	100.00
Mean		37.4
Co-eff. of Var		16.2
Gender		
Male	0	0.0
Female	120	100.0
Total	120	100.0
Marital status		
Single	21	17.5
Married	70	58.3
Divorced	17	14.2
Widowed	12	10.0
Widower	0	0.0
Total	120	100.0
Household size		
1-5	40	33.2
6-10	73	60.8
>10	7	5.83
Total	120	100.0
Years of extraction		
1-5	22	18.4
6-10	18	15.0
11-15	40	33.3
16-20	6	5
21-25	34	28.3
Total	120	100.0
Mean		13.5
Co-eff of Var		7.2
Extraction Status		
Minor occupation	57	47.5
Major occupation	63	52.5
Total	120.0	100.0
Cooperative membership		
Member	88	73.3
Non.member	32	26.7
Total	120.0	100.0
Sources of credit		
Bank	0	0.0
Cooperative	43	100.0
Friends and families	0	0.0
Government	0	0.0

Total	43	100.0
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Source: Field survey, 2009

From the Table it was discovered that most of the Shea-butter extractors were of the female gender. Who were mostly married but young and agile. Average age of shea-butter extractor was 37.4 years. This implies that Shea-butter extractors in the study area were mostly agile youths, who if availed the opportunity have the physical strength to process Shea-butter on large scale levels. More so, the fact that those involved in the Shea-butter extraction activities are youths implies that the activity is considered to be a relatively profitable and viable venture in the study area. The house hold size of the respondents as shown by the results indicated that more than half of the respondents had house hold size that consisted of 6.10 members, while the remaining had house hold sizes that were below 5 and greater than 10. The formal educational status of nearly half (48.4%) of the extractors to a large extent was the basic primary education. Respondents experience as regards she-butter extraction was also examined. The results as in Table indicated that respondents have been involved in shea-butter extraction on average for about 13 years. Over half of them (52.5 %) undertook the activity as their primary source of livelihood while others (47.5) undertake the activity as a minor occupation. Shea-butter production can support the family as a minor one. This implies that Shea.butter extraction serves as a major source of income to the extractors. (Dankelman and Davidson 1988; Western et al. 1994; Leaky 1999).The findings indicates that Shea-butter extraction is a lucrative job. As regards respondents membership of associations and cooperatives, a sizable proportion of them (77.3%) were members of various multipurpose cooperative societies.

Production Resources

Table 2: Tools and Implements used by the Respondents

Tools and implements	Frequency	Percentage
Crusher	30	25
Mixer	0	0.0
Roaster	40	33.3
Clay pots	120	100.0
Extractor	0	0.0
Container	90	75
Calabash	120	100.0
Basket	105	87.5
Mortar and pestle	120	100
Iron pot	75	62.5
Nylon	80	66.7
Paper	40	33.3 z

Source: Field Survey, 2009

Table 2 presents the production resources used by the respondents for Shea-butter extraction activities. The table indicates that all the respondents used clay pots, calabashes, mortars and pestles for their Shea-butter extraction activities. Other tools by most of the respondents were baskets, containers, nylons, iron pots, roasters, paper as well as crushers. The respondents' tools and equipments profile implies that most of their extraction activities is still being carried out as an indigenous and crude activity. They are yet to be well enlightened about the use of machines and other modern facilities in their extraction activities.

Shea-butter Marketing Chain

Figure 1 depicts the marketing channel/chain identified for the Shea-butter market in the study area, Kwara State. The Shea-butter fruit is sourced from various sources bulk depending both on seasonality and social-economic factors. During the peak season, extractors get the nut from gatherers while in the lean period wholesalers provide the main supply channel. After extracting the shea-butter, the product is sold to consumers usually at markets places by the extractor themselves and retailers as well.

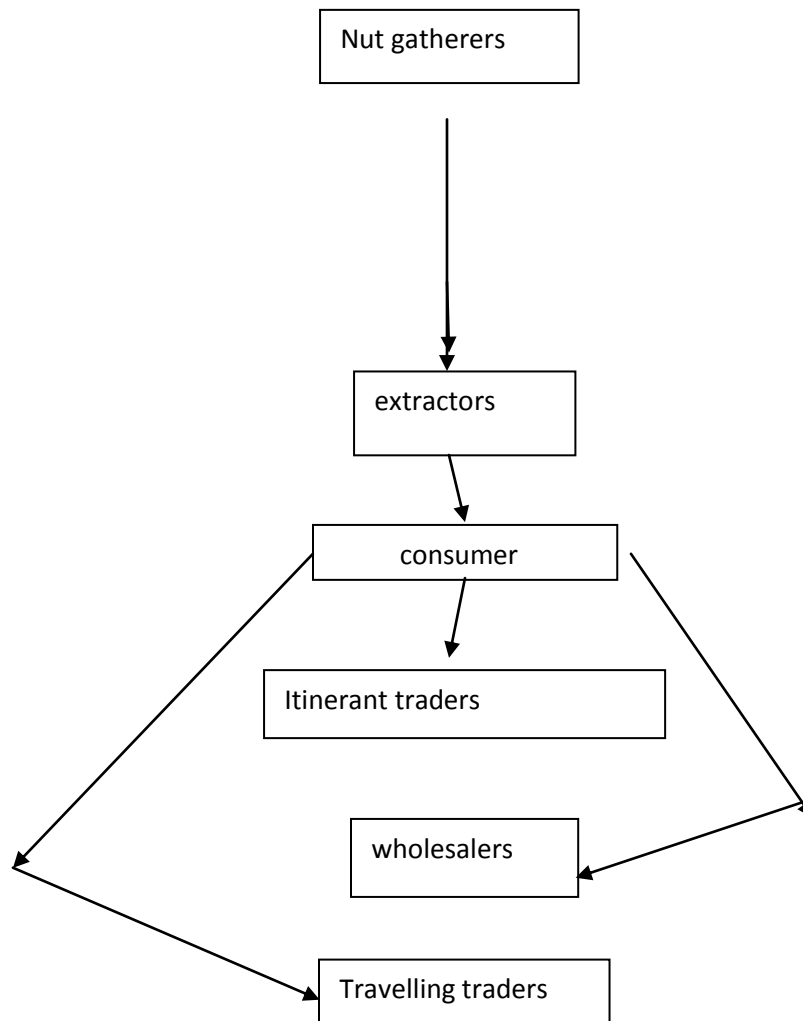


Figure 1: Shea-butter Trading Chain

Costs and Returns Structure to Shea-butter Extraction

Table 3 shows the cost and returns to Shea-butter extraction practiced by the respondents.

Table 3: Summary of Costs and Returns Structure to Respondent's Enterprise (₦/k)

Item	Average (₦: K)
Gross revenue	17,620.58
Less	
Total variable cost	5,201.50
Equals	
Gross margin	12,419.08
Less	
Depreciation on tools and equipments	3,561.90
Less	
Imputed cost of family labor	247.00
Equals	
RLM	8,610.18

Source: Field Survey, 2009

The Table shows that the cost and returns analysis showed that the average gross revenue accruing to shea-butter extraction was ₦776.58 per kilogram of processed Shea-nut, total cost is ₦521.50 while the net income is ₦255.08. Returns to labour and management (RLM) was found to be ₦86.18. This indicates that on the average extraction practices in the area is profitable.

Constraints of Respondents to Shea-Butter Extraction

Despite the profitability of Shea-butter extraction in the study area, investments in the Shea-butter enterprise is limited by myriads of problems. These are as presented in Table 5

Table 5: Constraints of Respondents to Shea-butter Extraction

Constraints	Frequency	Percentage (%)
Lack of capital	54	45
Poor and Inadequate marketing facilities	83	69.2
Low consumption of Shea.butter	91	75.8
Lack of sufficient supply of water	61	50.8
Cost of maintenance is high	73	60.8

Sources: Field Survey, 2009

The table revealed that (45%) of respondents lack enough capital in Shea-butter extraction implying that respondent did not engage sufficient capital into their extraction activities. A sizeable proportion of the respondents (69.2%) were affected by poor marketing problems. The result also revealed low levels of home use of Shea-butter among respondents households. This could probably be because of their poor orientation about the other beneficial uses of Shea-butter. Other constraints reported were those relating to high cost of machine maintenance. This stemmed from the high cost incurred in the use of diesel to power generators that were used in the Shea-butter extraction process.

Regression Analysis Results

The regression analysis was carried out to determine factors that examine the quantity of Shea-butter extracted by respondents. The summary of computer printout was presented in the table below.

Table 4: Regression estimates of Factors determining quantity of Shea-butter extracted

Function form	Constant	X1 no of labour	X2 Years of schooling	X3 Years of extraction	X4 Mode of extraction	X5 Quantity of fruit picked	R ²	F.value
Linear								
β	1.950	1.526	.01934	0.07263	.0.902	0.183		
t.value	2.422	6.326*	.0.087	1.718	.6.468*	1.155	0.690	53.862
Semi log								
β	0.804	0.03670	0.00007439	0.002979	.0.02075	0.004181		
t.value	28.380	4.323*	0.009	2.003*	.4.227*	0.750	0.554	30.543
Double log								
β	0.408	0.692	.0.237	0.106	0.01505	0.06907		
t.value	6.228	6.873*	5.545	3.200*	0.894	2.945*	0.520	26.759
Exponential								
β	1.956	5.782	.3.460	4.354	0.375	0.03001		
t.value	0.635	2.061*	.3.251*	3.598*	3.419*	0.012	0.447	20.210

*Significant at 5% level of significance

Source: Computer Print-Out, 2009

The Table shows that double-log function is the lead equation because it fulfills the econometric criteria. The equation had an R² of 0.520. The regression analysis results indicated that factors affecting the quantity of shea-butter output include number of man-hours of labour used, years of involvement in extraction and quantity of Shea fruits processed were statistically significant at 5% level of significance. Factors such as years of formal education and mode of Shea-butter were not significant factor. The result also revealed positive co-efficients for the significant variables implying that the higher the number of labour man days used, years of experience as well as of the quantity of fruits picked, the higher the quantity of Shea-butter extracted. The

totalities of the independent variables were responsible for 52% variation in quantity of Shea-butter extracted. The final regression equation is given as:

$$\log Y = \mathbf{0.408} + \mathbf{0.692} \log X_1 - \mathbf{0.237} \log X_2 + \mathbf{0.106} \log X_3 + \mathbf{0.01505} \log X_4 + \mathbf{0.06907} \log X_5$$

(6.228) (6.873)* (.5.545) (3.200)* (0.894) (2.945)*

Conclusion and Recommendations

This research assessed Shea-butter extraction activities in Kwara state, Nigeria. The study stemmed from the current drive at diversifying the nations' economy from a crude oil monolithic one to the real sectors. Based on the study findings,

Based on the findings, the study recommends the following

- Market opportunities should be sought by government and other stake-holders alike for the wasting abundant Shea-butter resources endowment of the savanna
- Governments and development partners should step up policies and action plans that will help develop and link up the so many wasting resources endowment like Shea-butter with the world markets. This will help open up and prosper some of these economies since they could availed the opportunity to export these resources/products to gain foreign exchange
- There is the need to provide crucial social amenities in the rural areas. Such amenities include banks and micro-finance to provide small scale development loans and other amenities so as to encourage small scale industrial businesses
- shea-butter extractors should be encouraged to form and join viable cooperatives within their vicinity. This will encourage rural resource mobilisation for use in small scale enterprises like that of the Shea-butter

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