

Economic Analysis of Shea Butter Production in Oke Ogun Area of Oyo State, Nigeria

Adesope A. A., Opute O.H., Bello K.G and Pitan O.O

Forestry Research Institute of Nigeria (FRIN), P.M.B 5087 Jericho, Ibadan

Corresponding Author: Adesope A. A.

Abstract: The Shea butter tree (*Vitellaria paradoxa*) is an important non-timber forest product (NTFP) in Nigeria owing to the role it plays in enhancing rural livelihood through income generation and poverty alleviation. Previous studies on the species largely focused on the production and uses of shea butter without considering the economics of its production. The study, therefore, is on the economic analysis of shea butter production in the Oke-Ogun area of Oyo State. Participants in the study comprised 100 respondents selected through a multi-stage sampling technique. A structured questionnaire was used in data collection. Data were analysed using descriptive statistical tools and budgetary technique. The results showed that shea butter generated a gross margin of #1,265,685.00 and net revenue of #1,815,440.20k respectively. The rate of returns on investment was #193.00 this implies that for every #100.00 invested in shea butter production generated a returns of 93 kobo. The results showed that the shea butter production in the study area can alleviate poverty and improve the standard of living of rural households.

Keywords: Economic, Shea butter, Oke-Ogun, Budgetary technique, Poverty alleviation, Rural livelihood.

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I. Introduction

The Shea nuts is an important non-timber forest products that play a major role in enhancing rural livelihood. The Shea trees (*Vitellariaparadoxa*) is a perennial crop that is usually found in the wild. It is widely grown throughout the country, are predominantly in 21 of the 36 states of the federation and are actually being handled by women. It belong to the family *Sapotaceae* and has annual rainfall of 1600 to 1500 mm (Enaberue *et al.* 2011). Shea nut tree bears fruit when it is about 15 years old, reaching full bearing capacity at 25 years and has a useful fruit bearing life span of 150 to 200 years (Anon 2012). The fruit is a spherical berry about 3 to 5 cm long and consists of a thin brown shell enclosing a single, dark-brown, egg-shaped seed embedded in a yellowish-green sweet pulp. Average production is between 15 and 20 kg of fresh fruit/tree, and about one tree in three is productive in each year. On average, 50 kg of fresh nuts give 20 kg of dry kernels which contain 40 to 55% of fat (Anon, 2011). Shea butter is an ivory coloured natural fat extracted from the seed of *vitellariaparadoxa* tree by crushing and boiling. Its extraction involves procurement of dried nuts from suppliers and it is widely used in cosmetics as a moisturizer and salve. It is estimated that Nigeria accounts for over 370,000 metric tonnes or 53 per cent of the capacity out of over 680,000 metric tonnes of shea nuts produced annually in West Africa, according to the Central Bank of Nigeria (CBN), and Oil Seeds Association of Nigeria (OSAN). The Shea butter industry in Nigeria is dominated by small scale with production capacity of less than 0.1 tons per day. (Steven Agbota 2017). In spite of the huge potential that Nigeria possesses in terms of the Shea tree resource, production of Shea butter still remains far below demand, both in the local and international markets as the quality of the butter falls below local satisfaction and international standard. This study examine economic analysis of Shea butter production in Oke-Ogun area of Oyo State. The objectives of the study are to:

1. Determine the contributions of Shea butter to income generation
2. Analyze the cost and returns in Shea butter production
- 3 Determine factors militating against the production of Shea butter

II. Methodology

Area of Study

The study was conducted in Oyo state. The state is located in the Southwestern part of Nigeria. It lies between Latitudes 2° 38¹ and 40 35¹ east and has a total population of 5,591,589 (National Population commission, 2006). There are 33 local government areas in the state. It is bordered on the north by Kwara, the east by Osun State and the south by Ogun States. In the west, it is bothered by Ogun state and partly by the Republic of Benin. The state has an annual rainfall ranging between 1000 mm-1400 mm. It also has a vast area

of fertile land that is suitable for the production of crops such as the vegetables, yam, cassava, cowpea, tomatoes, maize and perennial crops such as Shea nut, Cashew etc.

Sampling procedure

A multi-stage sampling technique was used in selecting respondents for this study. The first stage involved a purposive selection of three local government areas (LGAs) that are known primarily for Shea butter production from the 33 LGAs in the state. These are Atisbo, Saki East and Saki West. In the second stage, two communities were randomly selected from each of the three LGAs on the basis of the number of shea butter producers. In the study area 45 respondents were selected from Atisbo (Tede and Ago-Aare), 30 from Saki East (Ojeowode and Ago-amodu) and 25 from Saki West (Saki and Isaleoke), making a total of hundred respondents. Data were analysed using descriptive statistical tools and the budgetary technique.

Budgetary Technique Analysis

This technique was used to evaluate the level of profitability of Shea butter production. Revenue was computed as monetary value of the total output. The total revenue is equal to the quantity of output multiplied by the price per unit of the produce. The technique is expressed as

$$GM = TR - TVC$$

$$\Pi = GM - TFC$$

where π = Profit (₦)

TR = Total revenue (₦)

TVC = Total variable cost (₦)

GM = Gross margin (₦)

TFC = Total fixed cost (₦)

TC = Total cost (₦)

ROI = (Net Profit/Cost of Investment) x 100

III. Results And Discussion

Table 1: Socio-economic Characteristics of the Respondents

Variable	Frequency	Percentage (%)
Gender		
Male	24	24.2
Female	75	75.8
Total	99	100
Marital status		
Single	4	4.0
Married	90	90.9
Divorced	1	1.0
Widowed	4	4.0
Total	99	100
Occupation		
Shea butter producers	91	91.9
Artisans	1	1.6
civil servants	2	2.0
Trader	4	4.0
Others	1	1.0
Total	99	100
Educational status		
No formal education	17	17.2
Primary	45	45.5
Secondary	27	27.3
Tertiary	9	9.1
Others	1	1
Total	99	100
Experience(Years)		
0-10	24	24.2
11-20	20	20.2
21-30	26	26.3
31-40	20	20.2
41-50	6	6.1
51-60	3	3.0
Total	99	100

Source: Field survey, 2017

Gender: Majority (75.8%) of the respondents were females while 24.2% were males. This is because the process involved in the production of Shea butter attracts more females, while the males were more involved farming activities than Shea butter processing. This finding is in line with Jamala *et al.*, (2013), that the possible reasons maybe due to the nature and operations involved in the production processes in Shea butter. This is also confirmed by Carrettle *et al.*, (2009) that shea butter business is women’s.

Marital Status: Majority (90.9%) of the respondents were married while few (4.0%) of the respondents were either single or widowed. This is because shea butter improves the quality of life and standard of living of rural population as observed by Agbogidi and Okonta, (2003).This is because the married respondents will derive support from their family members in Shea butter processing.

Education: The result indicated that 17.2% of the shea butter producer had no formal education, 45% had primary education, 27.3% had secondary education while 1% of the respondent had Tertiary and others education. This implies that majority of shea butter producer had low educational status which could affect their level of adoption of new technology. This agrees with Schreckenber (2004) findings which said that it would be difficult for those that had low formal education in shea butter business to adopt modern techniques, innovation or new idea in their production.

Occupation: Majority (91.9%) of the respondents were strictly involved in the enterprise of Shea butter production while the remaining were artisan (1.0%), civil service (2%), trading (4.0%). This implies that respondents in the study area were strictly involved in the business as a means livelihood. The study discovered that the shea nut is available throughout the year so the producers are occupied with their processing. This study is in line with Ademola and Oyesola, (2012), that majority of the processors have their primary occupation to be Shea butter processing, showing the level of devotion to the vocation in the area.

Years of experience:

The distribution of the experience reveals that 11.4%, 33.1%, 32.7%, 18.1% and 4.7% of the respondents had years of experience range 1-5 years, 6-10 years, 11-15 years, 16-20 years and greater than or equal to 21 years, respectively. This implies that majority (33.1%) of the processors had between 6 and 10 years of experience. This is confirmed by Koloche, *et al.*, (2016) that Shea nut processors in Oke-Ogun areas had acquired enough processing experience that will encourage them to adopt improved Shea nut processing technologies.

Table 2. Marketing Structure of Shea butter

Variable	Frequency	Percentage (%)
Production frequency		
Daily	1	1.0
Weekly	49	49.5
Fortnightly	40	40.4
Monthly	9	9.1
Total	99	100
Markets		
Wholesaler	19	19.2
Final Consumer	1	1.0
Retailer	1	1.0
All of the above	78	78.8
Total	99	100
Shelf Life (years)		
Two	12	12.1
Three	29	21.3
Four	29	39.0
Five	28	28.2
Six	1	1.0
Total	99	100
Market Accessibility		
Local	96	97.0
International	2	2.0
Both	1	1.0
Total	99	100

Source: Field Survey, 2017

Production Frequency

The study revealed that 48% of the producer produce weekly, 40% produced fortnightly and 9% produced monthly. This shows that the process cannot be finished mostly at short period and produced at large quantity.

Marketing Channel

Table 2 shows that 78.8% of the respondent were sold direct to wholesaler, retailers and consumer, 19.2% were sold to wholesalers directly, 1% to retailers directly and 1% to final consumers directly. This implies that the Shea butter producer has access to all channels of marketing distribution and they can sell in small and large quantity depending on customer demands. This corroborates with the result of Garba *et al.*, (2015), said that Shea butter producer repack the Shea butter to suit consumer individual requirement by further chopping the butter into various sizes and repacking them according to consumer need base on wholesaler, retailer and final consumer .

Shelf life

Most (58.6%) of the respondents indicated that Shea butter shelf life is between 3-4 years while 28.3% of the respondent indicated that Shea butter shelf life can stay for 5 years. This implies that shea butter does not get spoilt quickly, as a result of this; it can be kept for a long time. Its unique characteristic (shelf life) encourages the marketing and storage.

Market Accessibility

The result also reveals that majority 97% of the Shea butter producer were sold locally, 2% of the producer sold at international markets and 1% sold both locally and internationally. This corroborates with Ademola *et al.*, (2012) study which said that the producer do not sell Shea butter outside the countries. The study found that they produced mostly weekly (49.5%) and fortnightly (40.4%). This implied that there is demand for shea butter so the producers produced frequently.

Table 3. Source of collection of *Vitellaria paradoxa* seeds in the study area

Source	%
Personal farm	3.0
Community farm	1.0
Forest	12.1
Buying	83.8
Total	100.0

Source: Field survey, 2017

Source of collection of *Vitellariaparadoxa* seeds in the study area

Table 3 shows the source of seed collection in the study area. About 12.1%, 1.0% and 3.0% of them sourced from the forests, community farms and personal farms respectively while the majority (83.8%) of the respondents sourced shea nuts from other sources such as buying from local and neighboring markets. This implies that other sources constituted the major source of seed in the study area.

Table 4. Sources of purchase of *Vitellaria paradoxa* seed in the study area

Source	%
Local market	76.8
Inter-state market	5.1
All of the above	6.1
Farm gate and local market	12.1
Total	100.0

Source: Field survey, 2017

Sources of purchase of *Vitellariaparadoxa* seed in the study area

Table 4 reveals that majority (76.8%) of the respondents purchased seeds used from the local market while 5.1% and 12.1% of them bought from inter-state market and farm gate/local markets respectively. However, 6.1 % of them purchased from both local and inter states markets. This implies that the major place of purchase in the area was the local market and this agrees with the findings of Ademola and Oyesola, (2012) which showed that shea butter was in abundant supply in the area. Most of the respondents (98%) confirmed that collection of *Vitellariaparadoxa* is seasonal

Table 5. Membership of the association by respondents in the study area

	%
Yes	72.7
No	27.3
Total	100.0

Source: Field survey, 2017

Membership of the association by respondents in the study area

Table 5 shows that majority (72.7%) of the respondent producers belonged to an association while few (27.3%) did not belong to any association in the study area.

Table 6. Determinant Price of *Vitellaria paradoxa* in the study area

Variable	Frequency	Percentage %
Association	69	69.7
Market	30	30.3
Total	99	100

Source: Field survey, 2017

Determinant Price of *Vitellariaparadoxa* in the study area

Table 6 shows the result of the price determinants of *Vitellaria paradoxa* in the study area. According to the results, majority (69.7%) of the respondents revealed that association determines prices of *Vitellaria paradoxa* are to be sold in the market while 20.3% of them indicated that individuals determined price in the market. It could be agreed upon that association is the major determinant of product price in the area.

Table 7. Processing methods of *Vitellaria paradoxa* in the study area

Variable	Percentage %
Local method	98.0
Modern method	1.0
Both	1.0

Source: Field Survey, 2017

Processing methods of *Vitellariaparadoxa* in the study area

Table 7.shows the processing method of *Vitellaria paradoxa* in the study area, which reveals that majority (98%) of the respondents indicated that they used local processing method while just 1% used modern processing methods. This implies that the local processing method is still mainly used in the study area. This agrees with the findings of Ademola and Oyesola, (2012), and, of Dauda *et al.*; (2014), that Shea butter is still mostly made in the traditional way by women who learned the methods from their elders. This method is characterized by low quality, low quantity and technical inefficiency (Carette *et al.*, 2009).The reason for using this local method could be that the modern technology is expensive this collaborated by Dauda *et al.*, (2014), who found that the inputs required for modern technology are quite costly and in most cases are beyond the reach of producers as they do not have adequate capital to purchase these vital logistics.

Factors militating against Shea butter production:

Majority (87.9%) of the respondents in the study area were involved in indiscriminate felling of tree for charcoal production. This is because the Shea tree (*Vitellariaparadoxa*) is one of the trees used in making for good quality charcoal. Tunde *et al.*, (2013) submitted that *Vitellaria paradoxa* produces good quality. This implies that there are alternative uses of shea butter trees that are competing with shea butter production.

Table 9: ESTIMATED INCOME FROM SHEA BUTTER PRODUCTION

Item	Amount (₦: k)
Fixed cost	
Revenue (Depreciation on fixed items)	1815440
Pot	74890.75
Mold	45012.34
Drum	1243299
Bowl	4094.07
Total Fixed Cost	69020.15
Variable cost	
Purchase Price	386460.60
Mill	94696.26
Mixing	26,113.64
Cooking	3607.62
Firewood	1714.64
Package material	113565.28
Transport	5441.34
Labor	18155.56
Total Variable Cost	549755.00

Total Cost	618775.15
Gross margin	1,265, 685.00
Net Profit	1,196,665.00
Rate of investment return	193.39

Table 9 reveals that the gross revenue was ₦1,815,440.20k. The total variable and fixed costs were ₦549,755.00k and ₦69,020.15k respectively, given the total cost of be ₦618,775.15k. Gross margin and net revenue were ₦ 1,265,685 and ₦1,815,440.20k respectively. The Rate of returns on investment was ₦193; this implies that for every ₦100 invested in the business, there will be returns of 93kobo

IV. Conclusion and Recommendation

The study confirmed that it can alleviate poverty and improve the welfare of the rural households'. The study revealed that gross revenue was ₦1,815,440.20k. The total variable and fixed costs were ₦549,755.00k and ₦69,020.15k respectively, given the total cost of be ₦618,775.15k. Gross margin and net revenue were ₦ 1,265,685 and ₦1,815,440.20k respectively. The Rate of returns on investment was ₦193; this implies that for every ₦100 invested in the business, there will be returns of 93kobo. It is therefore recommended that unemployed youths and retirees go into Shea butter production because it is profitable and cost of production is minimal.

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