Determinants of Market Participation among Small Scale Shea Butter Processors in Kwara State, Nigeria

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Abstract

The fact that shea butter is gaining much importance in the international market coupled with the high demands from confectionery and cosmetic industries call for empirical analysis on market decision among processors. The study examined the factors that inform market participation decision in shea butter among small scale processors in Kwara state. Zones A and C were purposively selected from the four ADP zones in Kwara State due to preponderance of Shea butter marketing activities. Simple random sampling was used to select 118 respondents. Data were collected through the use of interview schedule on the socio- economic characteristics of respondents, shea butter market participation and constraints to shea butter market participation. It was revealed that the average age of the respondents was 33 years, most were married (92.4%), illiterate (55.4%), lacked access to credit and market information with average income of ₦233, 547.06 (US$ 659.23) per annum. Lack of storage facility ($\bar{X}$ =2.12), distance to market ($\bar{X}$ =2.10) and discrimination from buyer ($\bar{X}$ =2.00) were major constraints to shea butter marketing. Age (β=-0.29), educational qualification (β=0.17), proximity to market (β=-0.22), access to market information (β=0.30), production output (β=0.34) and income (β=0.007, 0.026) from shea butter including membership in a group (β=1.39) significantly influenced respondents' decision to participate in shea butter marketing. The study concludes that shea butter processors in the study area have potential to contribute to economic growth and development but lack full participation in large scale or international markets thus, relying mostly on small local community based markets. Hence, it is recommended that shea butter processors be sensitised on investment of external incomes into shea butter production as a profitable venture and policy makers should also promote the village market collection centers.

Key words: Shea butter production, small scale processors, market participation, determinant
    Factor, Nigeria

Introduction

In recent years, the Shea tree has gained importance as an economic tree, because of the heavy demand for its butter locally and internationally. This is in recognition of the need to find substitutes for the rather expensive cocoa product (butter) (Julius, 2007). Researchers have also found out that, the Shea tree is the second most important oil crop in Africa after the oil palm tree. Onikoyi *et al.* (2013) noted that Kwara state is blessed with copious shea tree. These authors opined that the shea tree is as an economic tree that provides a veritable treasure throve of benefits for rural women.

In addition, the shea tree has proven to be a source of livelihood as well as a means of ensuring environmental sustainability through biodiversity conservation (Ahenkan and Boon, 2010; Godfred *et al.,* 2015). Similarly, Aboyellas (2002) posited that shea butter processing offer employment to rural women and also serve as a means of poverty alleviation and food security.

Shea butter extraction is a lucrative business especially in rural areas where the shea tree thrives (Daniel *et al.,* 2005). Similarly, Lovett (2004) posited that shea butter has a high–value

export to Europe and the United States, where it is considered a luxury product/commodity. The butter which is extracted from the kernel is used for traditional medicines, cosmetics, chocolates, candle and pastries as cocoa butter substitute. It is also used in pharmaceuticals and it is naturally rich in precursors of Vitamins A and E. Furthermore, shea butter is widely utilized for domestic purposes such as cooking, skin moisturizer, edible products (Alander, 2004). 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). In Europe and Japan, shea butter is prized for its superb healing and moisturizing properties (Lovett, 2004). It is an ingredient in body creams, sun screens, conditioners and in the treatment of burns and muscle pains.

The Shea processing is dominated by women and therefore contributes to significant proportion of their income. Majority of them that are engaged in the Shea industry for instance, do so because of the potential of the industry to reduce poverty levels (Technoserve, 2004). Financing the production and marketing of the Shea industry is therefore an important course for development. Hence, reliable evaluation of Shea butter processing to the socio-economic development of the rural population is very important. However, despite its nutritional and economic contribution to the rural poor, shea butter marketing has not received enough attention for its expansion as a sustainable rural industry. No systematic study had been done so far to evaluate the marketing potentials as well as factors influencing its marketing. Hence, identifying and analysing factors that determine participation in shea butter marketing is critical in designing carefully targeted policy interventions to ensure that rural processors benefit from smallholder market participation. Therefore, this study tends to determine the market participation in shea butter production in Kwara state.

Methodology
Study Location
The study was carried out in Kwara state which is one of the six states in the north central, Nigeria. It covers an area of 74256 km^2 and it is bounded in the north by Niger state, in the south by Oyo, Osun and Ekiti States, in the east by Kogi State and in the west by Benin Republic. Due to its unique geographical position, the State is referred to as the "gateway" between the north and the south of the country. The state is divided into sixteen (16) local government areas. Kwara state was selected for the study because the Shea tree occurs and thrives well in the state. In addition, there is a high concentration of shea nut processors within the Guinea and Savannah areas as well as the lower Sahel regions where the state falls (Ibrahim et al., 2016).

Sampling technique and sample size
The study employed a cross sectional research design. Multistage sampling technique was used in the selection of the respondents for this study. In the first stage, two zones namely; A and C out of the four agricultural zones were purposively selected, based on the preponderance of Shea butter processors activities (Onikoyi et al., 2014). This was followed by a purposive sampling of one Local Government Area (LGA) (Kaima and Moro) from each of the selected zones based on the preponderance of Shea butter processors. Thirty percent of ward in each of the selected LGAs were selected. A snow ball technique was used to generate a list of 236 shea butter processors. Fifty percent of shea butter processors were randomly selected to give a sample size of 118 respondents.

Data collection
Data were collected through interview schedule using structured questionnaires on the demographic characteristics of respondents, enterprise characteristics of respondents, market participation of small scale shea butter processors, constraints to shea butter market participation and factors associated with market participation in shea butter processing. Constraints to Shea butter processing was measured on a three point scale of very severe, severe, not severe and not a constraint, while

scores of 0,1,2 and 3 were assigned respectively. The mean score for each constraint was used in ranking in order of severity. According to Immink (1994), market participation is estimated as the proportion of the value of crop sales to total value of crop production. Hence, Shea butter market participation was computed as follows:

$$Market\ participation = \frac{Total\ value\ of\ Shea\ butter\ sales\ in\ Naira}{Total\ value\ of\ Shea\ butter\ production\ in\ Naira}$$

Data analysis
The analytical tools used for this study were descriptive and inferential statistics. Using SPSS, descriptive statistics such as frequency counts, mean distribution and percentage were used to analyse demographic characteristics,

participate in the market and Y=0, if otherwise); *X1, X2... X11* are explanatory variables that affect the market participation decision; *β0... β11* are parameters to be estimated; and *ui* is the stochastic disturbance term.

For this study, shea butter processors are said to be market participant if their proportion of value sold is more than 75% (Goletti, 2005; Ohen *et al.,* 2013). Thus, binary response variable is defined as Y=1 if respondents' sales exceed a threshold or critical level of Y*(75%) and Y= 0 if Y≤Y*. Here, the proportion of shea butter sold (say, above 75%) out of the total production by the smallholder processor in the production year used as the proxy of market participation

Table 1: Variables in the regression model

Variable Name	Variable Type	Variable definition and measurement
Sex of respondents	Dummy	1 if a respondent is male, otherwise 0
Age of respondents	Continuous	Age of the respondent in years
Years of marketing experience	Continuous	No. of years engaged in Shea butter marketing (in years)
Level of Education	Dummy	Formal education = 1, otherwise = 0
Use of Credit	Dummy	1 if took credit and 0 otherwise
Market Information	Dummy	1 if accessible to market information and 0 if not
Quantity produced	Continuous	Quantity of output in kg
Income from shea butter	Continuous	Estimated income in naira

enterprise characteristics of respondents and constraints to shea butter market participation, while inferential Statistics (Probit regression) was used to analyse factors that determines market participation in Shea butter production with the aid of STATA

The specified Probit regression model for identifying the factors that affect market participation decision of a respondent is formulated in the following way:

$Yi = β0 + β1X1 + β2X2 + β3X3 + β4X4 + β5X5 + β6X6 + β7X7 + β8X8 + β9X9 + β10X10 + β11X11 + ui$ …………………………………………… (2)

Where, *Yi* refers to market participation decision by a respondent (Y=1, if an individual

Results and discussions
Demographic characteristics of respondents
The distribution of the respondents by age indicated that, 64.4% were between ages 21 and 40 years, while 2.5% and 7.7% were less than 21 years and above 40 years respectively (Table 2).

This suggests that most were relatively young and were full of vigor and strength to carry out high labour demanding activities of processing and marketing Shea butter. This finding is in tandem with Senchi and Yakubu (2014) who reported that younger individuals participated more than older individuals in shea butter processing and marketing activities. Majority (92.4%) of the respondents were married, while 5.0% and 2.6% were widowed and

single respectively. This suggests that, most of the respondents' shoulder much family responsibilities and commitment which makes them 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. This shows that majority of the respondents in the study area had family responsibilities. This will give

education. No formal or low level of education among more than half of respondents would limit theirs' access to information which might be of immense assistance to the processors especially in the adoption of new processing techniques and exploitation of market opportunities or strategies. The household size of the respondents indicated that more than half (55.1%) had household size that consisted of 6.-10 members, while the remaining had household sizes that were below 6 (40.7%) and greater than 10 (2.3%).

Table 2: Distribution of respondents by demographic characteristics

Variables	No. of respondents Frequency (N = 118)	Percent	Average
Sex			
Male	10	8.5	
Female	108	91.5	
Age			
<21 years	3	2.5	
21-30 years	32	27.1	
31-40years	44	37.1	33.3years
41-50 years	30	25.4	
Above 50years	9	7.7	
Years of formal education			
No formal education	47	39.8	
Quranic	33	28.0	
Primary	20	16.9	
Secondary	18	15.3	
Marital status			
Single	3	2.6	
Married	109	92.4	
Widowed	4	3.3	
Divorced	2	1.7	
Household size			
1-5	48	40.7	
6-10	65	55.1	7 persons
Above 10	5	4.2	

them the opportunity of getting family labour to be used thereby, leading to enhancement of market participation. In addition, more than half (55.4%) of the respondents had no formal

Enterprise characteristics of respondents

Respondents experience on shea-butter processing as indicated in Table 3 revealed that they have been involved in subsector for

an average of about 11 years. Involvement of majority of respondents for more than ten years was an indication that respondents have long business experience in shea butter enterprise which could enhance their knowledge on processing and marketing activities. Table 3 also showed that most (59.5%) of the respondents did not have access to credit. Inaccessibility of greater percentage of respondents to credit facility implies that respondents did not inject sufficient capital/credit into their processing activities which could affect their participation in shea butter marketing. This finding is in consonance with Derbile *et al.* (2012) who reported low access to credit facilities among shea processors because of relatively high interest rates and other conditions set by loan providers. Less than half of them (44.1%) had access to market information. Unavailability of market information among respondents could further result in low sales, income, credit and limited business expansion thereby making it difficult for businesses owned by shea butter entrepreneurs to grow, survive and to diversify.

Table 3: Distribution of respondents' by enterprise characteristics

Enterprise characteristics	No. of respondents	Percent	Average
Access to credit			
Yes	29	24.6	
No	89	75.4	
Access to market information			
Yes	52	44.1	
No	66	55.9	
Years of Marketing			
1-5years	23	19.5	
6-10 years	48	27.1	
11-15 years	32	40.7	10.9 years
Above 15 years	15	12.7	
Quantity produced per month in kg			
≤ 20kg	28	23.7	
21-30kg	73	61.9	23.7kg
31-40kg	10	8.5	
Above 40kg	7	5.9	
Annual income from shea butter per annum			
≤ 200,000	17	14.4	
₦200,001- 300,000	35	29.7	
₦300,001- 400,000	57	48.3	
Above ₦400,000	9	7.6	
Identification with group/association			
Yes	69	58.5	
No	49	41.5	
Mode of marketing			
Local hawkers and consumers	102	86.4	
Contract with agro processors	12	10.2	
Super markets	4	3.4	

This is in line with the findings of Lovett (2004) that most shea butter processors are faced with market accessibility which makes them unable to supply the requisite consistency of quality. Furthermore, more than half (61.5%) of the respondents produced between 21 and 30 kg of shea butter output/Month, while 23.7% and 14.4% produced less than 21 kg and more than 30 kg respectively. The average production output was 23.7 kg per month which gives about 284.4 kg per annum. This indicates that the quantity of output produced by majority of the processor is low, which may result in the inability of the shea butter processors to increase their market participation. This finding agrees with Ademola (2012) who reported a similar level of shea butter production of between 252 kg to 480 kg per annum. Small production will imply small output and consequently small income to the processors as also found in this study. However, membership of more than half of respondents in an association/group is expected to facilitate information on marketing and improved methods of shea butter processing. This is in line with the finding of Cleophas (2013) that identification with groups or association improves access to

and consumers in the surrounding communities, 10.2% had established growing contracts with agro-processors, while a few (3.4%) sold to fresh produce markets and supermarkets. The plausible reason for the mode of shea butter marketing employed by the respondents could be attributed to inconsistency, low quantity and poor quality of shea butter, as these agro contractors and supermarkets require large quantities of good-quality products on a sustainable basis. In addition, the need to minimize transportation cost could be responsible for the sales of shea butter within the local communities.

Market participation of small scale shea butter processors

The Market participation of small scale shea butter processors are given in Table 4. Produced shea butter annually valued approximately at ₦345,179.42 (US$962.51) and ranges from ₦22,500 (US$62.74) - ₦ 423,000 (US$1179.51) while the average annual shea butter sold was ₦233,547 (US$$651.23). The market participation is computed to be 0.64 which indicates that on the average, a shea butter processor sells 64% of his total production.

Table 4: Market Participation of Small scale shea butter processor

Variable	Sample	Min.	Max.	Mean	Std. Dev.
Total value of shea butter produced	85	₦22,500	₦423,000	₦345,179.42	₦325,981.50
Total value of shea butter sold	85	₦18,000	₦315,000	₦233,547.06	₦219,716.10
Market participation	85	0.04	0.95	0.64	0.20

market. Based on income generated from shea butter, the price at which a kg/bowl of shea butter was sold in the study area ranged from ₦2,500.00 (US$6.97) to ₦3,000.00 (US$8.37). About 55.9% of the respondents earned above ₦ 300,000.00 (US$832.17) with an average income of ₦233, 547.06 (US$651.23) per annum. The results also revealed that more than half (58.5%) of the respondents belong to a group or association as depicted in Table 3. With respect to mode of Shea butter marketing, Table 3 also revealed that majority (86.4%) of the respondents sold directly to local hawkers

Constraints to shea butter marketing

Table 5 reveals that lack of storage facility ($\bar{X}$ 2.12) ranked first among the constraints faced by the respondents in the study area. A sizeable proportion of the respondents were affected by distance to market ($\bar{X} = 2.10$). Conditions of the road to the nearest towns determine accessibility of markets. In contrast, a lack of road connectivity can lead to delays in transferring produce to market areas, which can lead to quantitative and qualitative losses in shea butter. This was closely followed by discrimination from buyer ($\bar{X} = 2.00$) and low price from buyer ($\bar{X} = 1.97$).

Other constraints reported were unstable price ($\bar{X} = 1.92$), cost of transportation ($\bar{X} = 1.91$) and lack of standard measurement ($\bar{X} = 1.88$). The constraints variable imply that when price does not commensurate with time, resources and man power employed in processing activities, market participation by respondents tend to be hindered. This finding is in agreement with Laube (2015), that prices offered to shea processor are usually unfair rather than beneficial. Similarly, Aculey (2007) asserts that traditional processing usually results in poor quality and unhygienic products, thus causing buyers to offer low prices to processors. These constraints however impedes marketing demands of production in larger local and international markets, thus resulting in reliance in the small local community based markets where middlemen/women buy and in turn repackage the butter for sale in bigger local and international markets hence limiting the profit margin of processors who do the most difficult job of production.

by the following eight covariates: proximity to market, access to market information, access to credit, age, educational qualification, income from Shea butter production and quantity of shea butter. Table 6 also reveals a R^2 value of 0.616 which suggests that about 61.6% of the variation in the dependent variable is explained by variation in the explanatory variable. Statistics in Table 6 further revealed a strong significant ($p \leq 0.05$) and very weak negative relationship between age of shea butter processors and market participation in the study area i.e. ($\beta = -0.29$; $p = 0.000$). Negative but significant relationship between age and market participation indicates that as respondent advances in age, their productivity and market participation decreases. The plausible reason could be the labour intensive nature of shea butter processing activity. This corroborates the finding of Skirbekk (2003) that job performance decreases as workers advance in age. A positive significant relationship also existed between

Table 5: Distribution by constraints to shea butter marketing

Constraints	Very severe	Severe	Not severe	Not a constraint	Mean	Rank
Lack of storage facility	46 (38.8)	54 (45.6)	13 (11.3)	5 (4.4)	2.12	1st
Distance to market	59 (50.0)	32 (26.9)	7 (6.3)	20 (16.9)	2.10	2nd
Discrimination from buyer	38 (31.9)	47 (40.0)	29 (24.4)	4 (3.8)	2.00	3rd
Low price	26 (21.9)	70 (59.4)	15 (12.5)	7 (6.3)	1.97	4th
Unstable price	27 (22.5)	57 (48.1)	33 (28.1)	1 (1.3)	1.92	5th
Cost transportation	37 (31.3)	53 (45.0)	8 (6.9)	20 (16.9)	1.91	6th
Lack of standard measurement	43 (36.4)	44 (37.3)	6 (5.0)	25 (21.1)	1.88	7th
Inadequate labour	23 (19.5)	33 (27.1)	36 (30.5)	27 (22.9)	1.43	8th
Low patronage	14 (11.9)	31 (26.3)	41 (34.7)	32 (27.1)	1.23	9th

*Figures in parenthesis are percentages
*Figures not in parenthesis are frequencies

Factors that determines market participation in shea butter production

Factors associated with processors' market participation as depicted in Table 6 shows that, among the eleven covariates (age, household size, marital status, education, income, proximity to market, market information, credit access, years of experience and output of Shea butter) considered for the model, participation in Shea butter market is influenced to a great extent

market participation of shea butter processors and their education ($\beta = 0.17$, $P = 0.049$). Thus suggesting that educational qualification of respondents increases respondents' participation in Shea butter marketing. The significant relationship between respondents' education and market participation is in line with Berhanu and Jaleta (2010). Significant relationship between access to market information and market participation also implies that the more

respondents have access to market information, the more they tend to participate in shea butter marketing.

The result as shown in Table 6 also indicate a negative and significant relationship between proximity to market and respondents' decision to participate in shea butter marketing (β=-0.22, p=0.015). There was a positive significant relationship between access to market information and market participation (β=0.30, P=0.003). This suggests that the farther the distance to market, the lesser the willingness of respondents to participate in shea butter marketing. This result is in tandem with Key *et al.* (2000) and Makhura *et al.* (2001) who affirmed that distance to the market negatively influences the decision to participate in markets. Production output also showed a significant relationship with market participation in shea butter (β=0.34, p=0.004) Usually, quantity produced will determine where to sell. The result indicates that an increase in production output will increase respondents' participation in Shea butter marketing. Similarly, income from shea butter significantly contributed to respondents' decision to participate in shea butter marketing

in Shea butter marketing. Membership of shea butter group or marketing associations significantly contributed to respondents' decision to participate in shea butter marketing (β=1.39, P = 0.000). The plausible reason for the significant relationship between membership in association and market participation could be attributed to the fact that group dynamics creates synergy among the respondents and enables them to access market information as well as share experiences. Abera (2009) stated that group dynamics facilitate access to improved technology, training and output markets and consequently increasing expected profits.

Though not significant, respondents' household size and years of experience had a positive sign implying that they promote respondents' decision to enter the market. This finding is in line with Goetz (1992) who found a positive but no significant effect of size of household on entering the market as a seller. Cadot *et al.* (2006) explained that large households seem to have higher opportunity costs, perhaps which is reflected in the fact that they have lower per-capita income and hence less surplus to purchase capital equipment to switch to the market.

Table 6: Probit Analysis showing the factors that determines market participation by small scale shea butter processors

Variable	Coefficient	Std. Err.	Z-value	P>|z|
Age	-0.29	0.359	0.54	0.000**
Marital status	0.16	0.47	0.69	0.492
Level of education	0.17	0.75	1.99	0.049*
Household size	0.13	0.43	1.59	0.114
Production output	0.34	0.07	0.52	0.004**
Income	0.01	0.04	3.31	0.026*
Years of experience	0.11	0.01	1.29	0.199
Market information	0.30	0.97	2.03	0.003**
Access to credit	0.55	0.93	2.80	0.000**
Proximity to market	-0.22	0.03	-0.61	0.015*
Membership in a group	0.88	1.39	0.63	0.000**

Log likelihood = - 17.167565, LR Chi² = 72.4; Prob> Chi² = 0.000; Pseudo R² = 0.616

in the study area (β=0.007, p=0.026). This implies that an increase in income from Shea butter processing would increase participation

Conclusion and Recommendations
The study observed that small scale shea butter processors have potential to contribute to

economic growth and development. However, they are constraints with various factors ranging from lack of storage facility, distance to market, and discrimination from buyer and low price from buyers. These challenges further hinder marketing demands of production in larger scale and international markets, thus making them rely on small local community based markets where middlemen/women buy and in turn repackage the butter for sale in local and international markets, which further limits their profit margin. It was also revealed from the study that age, educational qualification, proximity to market, access to market information, production output, income and membership in a group or marketing cooperative all contributed to decision to participate in marketing of shea butter in the study area. In the light of these findings, it is also recommended that shea butter processors be sensitised on investment of external incomes into shea butter production as a profitable venture and policy makers should also promote the village market collection centres. Membership of a group or cooperative being a key factor in enhancing the volumes of shea butter sold should be encouraged, it is recommended that policy makers should promote collective action among smallholders because it eases access to production and marketing information as well as cheaper inputs.

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