

Shea Butter Processors' Perception on Modern Processing Technologies in Oyo State

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Abstract: Nigeria is the largest producer of shea butter in the world in which Oyo State happened to be one of the largest producers of shea butter. The country supposed to be earning substantial income from its processing but the reverse is the case due to low quality and quantity of shea butter produced. It is well known that the method of processing Shea butter not play an important role in increasing productivity but also have direct impact on production quantity and quality. This research study aimed at assessing the perception of shea butter processors as it relate to modern processing technologies in Oyo State, Nigeria. The study use interview schedule was use to collect data. Multistage sampling procedure and purposive sampling techniques were used for the scheduled two hundred and twenty eight respondents in the study area Data collected were subjected to both descriptive and inferential statistical analyses. Perception index shows more than half (50.4%) of the processors had favourable perception on use of Shea butter modern processing technologies. The coefficient correlation shows that significant relationship existed between the perceptions of users of modern processing technologies and level use of modern technologies. ($r= 0.286$; $p<0.05$). It recommended that Nigerian agricultural engineers should be empowered to devise appropriate adaptive technology. Also there should be a follow up visits by extension agents to achieve desired results about the modern shea butter technologies.

Keywords: Shea Butter; Processors; Perception; Modern Processing; Technologies.

1. Introduction

The importance of Shea tree to Nigeria economy is not in doubt, but the quality of the butter that is produced is poor owing to the method of production [1, 2]. The level of utilization of modern processing techniques has direct effect on the capacities of the processors in term of the quality and quantity of Shea butter produced. As suggested by [3] and [2] that the human awareness and perception on what makes the environment sustainable, is very crucial to creating and maintaining a sustainable environment, Moreover, human attitudes are also an important component of urban social-ecological systems and sustainable environment that relates to the actual interactions of people with urban green space, it could as well be an important psychological driver influencing the composition of urban residential yards, making the environment more sustainable.

Nigeria is the largest producer of Shea nuts in the world [2, 4]. Shea trees are found in 21 states of the federation including the FCT [5]. These include Niger Kogi, Kwara, Kebbi, Kaduna, Benue, Oyo and Ogun states. The country should be able to earn substantial foreign exchange from the export of Shea nuts and its derivatives because of the high demand in the international market as a result of the use of Shea butter as a substitute for Cocoa Butter Equivalent (CBE).

Non-timber forest product (NTFPs) is an important source of incomes for local people in sub-Saharan Africa countries where they are exploited for economic resources. Shea fruits are "non-timber forest products" (NTFP) that are gathered annually during the Shea tree fruiting season that extends from May to September. Shea butter processing in Nigeria is mostly done traditionally by women in the rural area. The procedure is quite tedious and time consuming, from collection of the Shea fruits to the production of the final product. Opportunities for poverty reduction, income generation and improvement

in social wellbeing created by Shea butter processing are missing owing to traditional method of processing used largely in the country. The method of processing is known to have direct impact on production quantity and quality of Shea butter. It is to this end that this study seeks to investigate shea butter processors' perception on modern processing technologies in the study area.

2. Methodology

The study was carried out in Oyo State. The study area is located in the South West Geopolitical zone of Nigeria. It lies between latitudes 7⁰N and 9⁰N and between longitudes 2.5⁰ E and 5⁰ E. It has a total land area of 28,454 square kilometres and total population of 5,591,589 [6]. There are 33 local government areas in the state. It is bordered in the north by Kwara State, east by Osun State and in the south by Ogun State. In the west, it is bothered by Ogun State and partly by the Republic of Benin.

The amount of rainfall in the state annually ranges between 1000 mm-1400 mm. It is also endowed with vast area of fertile agricultural suitable for crops production such as tomatoes, vegetables, cowpea maize cassava yam, and perennial crops such like Shea tree, Cashew etc. Farming activities in the state is largely characterized by traditional method and small scale relying on manual labour involving the use of cutlasses and hoes [1]. The state has two vegetation zones which are guinea savannah in the North and rain forest in the south. The northern savannah zone of the state comprises of moist and dry woodland [7]. Shea tree is dominant in dry woodland of the state. The area is designated as Oke-Ogun and ten (10) local governments make up the area. They include Atisbo, Kajola, Iseyin, Itesiwaju and Oorelope. The rest are Olorunsogo, Iwajowa, Irepo, Saki East and Saki West.

Multistage sampling procedure was used in this study. At stage one purposive selection of Oke-Ogun area in the state was chosen for its notable abundance in Shea butter tree and processing. At stage two, 30% of the total numbers of Local Government in the area were purposively selected to facilitate spread and representation of all. Three (3) major Shea Butter producing Local Government Areas were selected. They are Atisbo, Iseyin and Saki West. The third stage involved 30% random selection of wards from the selected Local Government Areas. The fourth stage involved 60% random selection of processors from each wards. This leads to the selection of 228 processors for the purpose of the study.

Interview schedule was used was used to determine respondents' socio-economic characteristics (age, sex, marital status, etc.), perceptions of users of modern processing technologies and level use of modern technologies and the constraints of shea butter processing. The data collected were analysed through descriptive statistics, such as percentage tables and frequency tables. Furthermore, inferential statistics, such Pearson Product Moment Correlation (PPMC) and linear regression analysis were used to test hypothesis of this study data.

3. Results and Discussion

The result in [table 1](#) presents the outcome of research finding on the socio-economic characteristics of Shea butter processors in the study area. According to the result, more than half (74.1%) of the respondents were females while the remaining 24.9% were males. These findings suggest that there were more males in the study area. The result also depict that 37.3% and 31.1% of the respondents were within the age range of 51 to 60 years and 41 to 50 years respectively. The average age of the respondents was 52 years. Youth were not actively involved in Shea butter processing activities; this however could be attributed to rural urban drift by the youth in search of white collar jobs. This study is in line with [8] who indicated that the average age of the Shea butter processors in Oyo State was 56years.

The result also showed that most (74.1%) of the processors were female. This finding suggests that the females are mainly engaged in the Shea butter value chain. This agrees with [9] who found that 100% of the Shea butter value chain processors were female and this may due to the intersection of the Shea production season with the time for agricultural production; hence the males are preoccupied with conventional farming activities.

Also, majority (51.3%) of the respondents were Muslim, while 36.9% practiced Christianity and 11.8% were traditional worshippers. This indicates that the respondents were highly religious however the dominance of western religion over the traditional religion of the respondents is noted in the study area. In terms of marital status majority (64.9%) of respondents were married while only 4.8% were single. This indicates that most of the processors were married. This implies that, majority of the respondents are considered to be responsible to take any rational decisions in the uptake of any innovation. This finding is in line with [10]; [11], who reported that majority of the Shea-butter processors in Nigeria, are females who are married and opined that this might be as a result of female farmer's responsibility in diversifying livelihood in the rural household.

Furthermore the study also unfold that more than half (57.4%) of the respondents had household size of 4 to 6, 24.6% had between 1 and 3 while 18.0% had above 6 household size. Processing of Shea butter requires many hands, particularly the traditional processing system that is the most prevalent in the studied communities. Thus, respondents with larger household size are more able to cope with the rigor involve in processing of Shea butter due to the availability of cheap family labour while smaller household size will required more hired labour. This is almost in line with the findings of [1] who indicated about 60.7% of the processors in Atisbo Local Government Area of Oyo State had between 7 to 10 household.

The educational attainment of Shea butter processors plays an important role in their ability to acquire new technologies. The majority of the Shea-butter processors surveyed (76.8%) had at least primary school education, while only few (23.2%) of the respondents had never been to school. This indicates that most processors can read instructional manuals. High educational levels imply that Shea butter processors could easily be trained in improved Shea-butter processing technologies. This agrees with [12] findings that education stimulate the acceptance of improved technology since education facilitates adoption of innovation. The result further revealed that majority (65.8%) of the respondents had Shea butter production as their major means of livelihood. This agrees with the findings of [13] who indicated that about 95% of the processors are involved in Shea nuts processing on fulltime basis in Nigeria.

Data revealed that most (73.2%) of the respondents use the semi mechanized processing method, while 22.4% use traditional processing method with only 4% used modern processing. This may be due to the fact that they have no knowledge about the modern method and this justifies the points said earlier on that the product is unsuitable for exportation as a result of lots of impurities and are rather consumed locally thereby fetching low income for the processors. This is in line with the findings of [14] in indicated that majority (64.4%) of the Shea butter processors in Nigeria use the traditional processing method.

The analysis showed that almost half (41.2%) had between 11 and 15, 33.3% had between 16 and 20 years while 18.9% and 6.6% had 6 to 10 and 1 to 5 years of experience in Shea butter processing respectively. The experience of the respondents in Shea butter processing is sufficient for a thorough understanding of the technical procedures of doing the business profitably. This result is also in line with [15] who indicated that majority (46%) of the respondents had between 11 to 20 years of experience in Shea butter processing in Nigeria. Findings in the data revealed that major sources of labour for Shea processing activities in the study area were both family and hired labour (59.2%), while 29.8% use on hired labour and 11.0% used on family labour in Shea nut processing activities. This confirms extensive use of the social form of labour in Shea nut processing activities in the study area.

Table 1. Distribution by socio-economic demographic of Shea butter processors in the study area

| Sex (N=228) | N (%) | Educational Status (N=228) | N (%) |
|-------------------------------|--------------|---|--------------|
| Male | 59 (25.9) | Primary | 76 (33.3) |
| Female | 169 (74.1) | Secondary | 84 (36.8) |
| Age range (N=228) | | Tertiary | 15 (6.6) |
| 31-40 years | 32 (14.0) | Non formal education | 53 (23.2) |
| 41-50 years | 71 (31.1) | Primary Occupation (N=228) | |
| 51-60 years | 85 (37.3) | Farming | 43 (18.9) |
| 60 + | 40 (17.5) | Shea processing | 150(65.8) |
| Religion (N=228) | | Artisanship | 35 (15.4) |
| Islam | 117 (51.3) | Types of processing technologies (N=228) | |
| Christianity | 84 (36.8) | Traditional | 51 (22.4) |
| Traditional | 27 (11.8) | Modern | 10 (4.4) |
| Marital Status (N=228) | | Semi mechanized | 167 (73.2) |
| Single | 11 (4.8) | Years of experience (N=228) | |
| Married | 148 (64.9) | 1-5 | 15 (6.6) |
| Separated | 42 (18.4) | 6-10 | 43 (18.9) |
| Divorced | 27 (11.8) | 11-15 | 94 (41.2) |
| Household size (N=228) | | 16-20 | 76 (33.3) |
| 1-3 | 56 (24.6) | Sources of labour (N=228) | |
| 4-6 | 131 (57.5) | Family Labour | 25 (11.0) |
| 7-9 | 35 (15.4) | Hired Labour | 68 (29.8) |
| 9+ | 6 (2.6) | Both | 135 (8.4) |

Source: Field survey, 2021

Table 2 presents the distribution of the respondent on the use of Shea butter modern processing technologies. From the table, the perception on use of Shea butter modern processing technologies using the mean value include: It is very difficult to find ($\bar{x} = 3.57$), It could be hygienic ($\bar{x} = 3.53$), It is only accessible to rich processor ($\bar{x} = 3.52$), butter may be high in demand ($\bar{x} = 3.52$), processors may use more or more technology because of the nature of tradition process ($\bar{x} = 3.52$), the uses modern technology will conserve energy during processing ($\bar{x} = 3.51$), use of modern technologies may increase profits ($\bar{x} = 3.51$), modern technology saves time ($\bar{x} = 3.50$), modern process technology may achieve goal quality butter ($\bar{x} = 3.44$), modern technologies are operated on individual basis because of his complexity ($\bar{x} = 3.43$), using modern technology could lead to increase productivity ($\bar{x} = 3.40$), cost of production in using modern technology is high ($\bar{x} = 3.40$), large family size encourage processor to use modern technology ($\bar{x} = 3.37$), traditionally processed Shea butter may be high in demand ($\bar{x} = 3.32$), lazy women appear to use modern technology ($\bar{x} = 3.29$) and modern process equipment is expensive ($\bar{x} = 3.24$).

Table 2. Perception on the use of Shea butter modern processing technologies

| PERCEPTION ON SHEA BUTTER MODERN PROCESSING TECHNOLOGIES | SA | A | D | SD | MEAN |
|---|------|------|------|------|------|
| Use of modern technologies may increase profits | 60.5 | 32.5 | 4.8 | 2.2 | 3.51 |
| Using modern technology may lead to high losses | 5.3 | 11.0 | 49.6 | 34.2 | 1.87 |
| Using modern technology could lead to increase productivity | 50.9 | 39.9 | 7.9 | 1.3 | 3.40 |
| The cost of production in using modern technology is high | 45.2 | 50.9 | 2.6 | 1.3 | 3.40 |
| Modern technology saves time | 56.1 | 38.2 | 4.8 | 0.9 | 3.50 |
| The uses modern technology will conserve energy during processing | 58.3 | 36.0 | 4.4 | 1.3 | 3.51 |
| It is very difficult to find | 67.5 | 25.4 | 3.5 | 3.5 | 3.57 |
| It could be hygienic | 61.0 | 33.3 | 3.5 | 2.2 | 3.53 |
| It is only accessible to rich processor | 59.2 | 36.8 | 0.4 | 3.5 | 3.52 |
| It used income could improve with the use of modern technology | 14.9 | 14.0 | 51.3 | 19.7 | 2.24 |
| Lazy women appear to use modern technology | 36.4 | 58.3 | 3.5 | 1.8 | 3.29 |
| Traditionally processed Shea butter may be high in demand | 48.2 | 37.7 | 11.8 | 2.2 | 3.32 |
| Traditionally processed Shea | 41.7 | 49.1 | 7.9 | 1.3 | 3.31 |
| Butter may be high in demand | 57.4 | 38.2 | 3.1 | 1.3 | 3.52 |
| Modern technologies are operated on individual basis because of his complexity | 50.0 | 44.3 | 3.9 | 1.8 | 3.43 |
| large family size encourage processor to use modern technologies | 42.5 | 53.5 | 2.6 | 1.3 | 3.37 |
| Processors may use more or more technology because of the nature of tradition process | 57.0 | 39.5 | 2.2 | 1.3 | 3.52 |
| Modern technologies may less hazardous | 12.7 | 6.6 | 45.6 | 35.1 | 1.97 |
| Modern process equipment is expensive | 44.3 | 39.9 | 11.4 | 4.4 | 3.24 |
| Modern process technology may achieve goal quality butter | 51.3 | 43.4 | 3.1 | 2.2 | 3.44 |

Source: Field survey, 2021

Overall, Table 3 shows over half (50.4%) of the processors had favourable perception on use of Shea butter modern processing technologies, while about 49.6% had unfavourable perception on use of

Shea butter modern processing technologies. This is in line with [2] who indicated that majority (62.5%) of the Shea butter processors had high perception towards the use of modern processing technology. The perception can be improved through sensitization of the processors and government can encouraging them to use the modern processing technologies by assisting them to acquire some of the machines needed for processing.

Table 3. Perception Index

| Variables | Frequency | Percentage | Mean | Std. Deviation |
|--------------|-----------|------------|-------|----------------|
| Unfavourable | 113 | 49.6 | 64.47 | 5.22 |
| Favourable | 115 | 50.4 | | |
| Total | 228 | 100.0 | | |

Source: Field survey, 2021

Table 4 shows that significant relationship existed between the perceptions of users of modern processing technologies and level use of modern technologies. ($r= 0.286$; $p<0.05$). There was positive relationship between the perception and the level of use. It implies that as the respondents' perception of modern Shea butter processing technologies increases, their level of utilization increases too. This study is in line with the findings of [2] who shows that there was significant relationship between the level of awareness of the respondents and perception of modern processing technology ($r= 0.182$; $p= 0.046$).

Table 4. Correlation analysis relationship between the perceptions of users of modern processing technologies and level use of modern technologies

| Variable | r-value | p-value | Decision |
|--|---------|---------|-------------|
| Perceptions of Shea butter processors on use of modern processing technologies | 0.286** | 0.000 | Significant |

Source: Field survey, 2021; **Correlation is significant at the 0.01 level (2-tailed).

From table 5 the constraints associated with Shea butter processing in the study area were presented. The findings revealed that majority of the variables considered were severe constraints to Shea butter processing as shown by the mean scores. Availability of fuel wood ($\bar{x}=3.81$), storing ($\bar{x}=3.68$), sunlight ($\bar{x}=3.66$), availability of water ($\bar{x}=3.64$), cost of input ($\bar{x}=3.51$), rainfall ($\bar{x}=3.45$), competition for nuts market ($\bar{x}=3.45$), transportation ($\bar{x}=2.76$), knowledge of improved technologies ($\bar{x}=2.45$) and credit facilities ($\bar{x}=2.24$). Lack of credit is the root causes of the other problems that eventually affect the level of utilization of modern processing technologies. This is so because the modern processing equipment are very expensive and the processors are at the mercy of Non-governmental and governmental agencies to assist them in procuring the equipment. This agrees with the findings of [8] who indicated that credit unavailability is the most important constraint faced by Shea butter producers.

Table 5. Distribution by constraints associated with Shea butter processing

| CONSTRAINTS ENCOUNTERED | VERY SEVERE | SEVERE | MILD | NOT SEVERE | MEAN |
|------------------------------------|-------------|--------|------|------------|------|
| Rainfall | 49.1 | 46.5 | 4.4 | - | 3.45 |
| Sunlight | 69.3 | 28.1 | 1.8 | 0.9 | 3.66 |
| Wind | 0.9 | 9.6 | 46.9 | 42.5 | 1.69 |
| Storing | 72.3 | 23.7 | 3.1 | 0.9 | 3.68 |
| Knowledge of improved technologies | 4.4 | 44.3 | 43.0 | 8.3 | 2.45 |
| Expertise | 0.9 | 21.1 | 48.2 | 29.8 | 1.93 |
| Cost of input | 58.3 | 36.0 | 3.9 | 1.8 | 3.51 |
| Competition for nuts market | 51.3 | 43.4 | 4.4 | 0.9 | 3.45 |
| Credit facilities | 7.0 | 23.3 | 56.1 | 13.6 | 2.24 |
| Transportation | 17.5 | 47.9 | 27.6 | 7.0 | 2.76 |
| Availability of water | 65.4 | 33.3 | 0.9 | 0.4 | 3.64 |
| Availability of fuel wood | 82.1 | 17.1 | 0.4 | 0.4 | 3.81 |

Source: Field Survey, 2021

In summary, from the findings of this study it can be concluded that most of the Shea butter processors in Oyo State were getting old. Majority of the processors were not educated, married women who have been in processing for a long time with several years of experience. More than half of the processors had favourable perception on the use of Shea butter modern processing technologies. Based on

the principal findings of this study, it is therefore recommended that Nigerian agricultural engineers should be empowered to combine Shea butter indigenous knowledge with modern knowledge to devise appropriate adaptive technology. Also there should be a follow up visits by extension agents and relevant agencies to ensure that the desired results in Shea butter processors perception, knowledge and skills are achieved and sustained about the modern shea butter technologies.

References

- [1] A. O. Ademola, O. B. Oyesola, and S. O. Osewa, "Assessment of Sheabutter Processing among Rural Dwellers in ATISBO Local Government Area of Oyo State, Nigeria," *European Journal of Business of Social Science*, vol. 1, pp. 1-8, 2012.
- [2] O. A. Akinsokeji, S. A. Tijani, M. K. Sanusi, and L. Igene, "Perception of Modern Processing Technology by Shea Butter Processors in Kwara State, Nigeria," *Journal of Agricultural Extension*, vol. 21, pp. 1-14, 2017.
- [3] J. Addaquay, "Economic and Technology Assessment of West African Base Shea Nut," *World Journal of Engineering and Technology*, vol. 3, 2004.
- [4] FAO, "Minor Tropical Fruits Main Streaming A Nich Market," pp. 69-77, 2018.
- [5] Nigerian Export and Promotion Council (NEPC), 2020.
- [6] National Population Commission (NPC), "Report on the Census 2006, Final Results of Federal Republic of Nigeria. Official Gazette No.2 Abuja 2nd Federal 2009.Vol. 96. Abuja Printed and Published by Federal Government Printer, Abuja, Nigeria," 2006.
- [7] J. Odebiyi, S. Bada, R. Awodoyin, P. Oni, and A. Omoloye, "Population Structure of VitelariaparadoxaGaertn. F. and Parkiabiglobosa (Jacq.)Benth.in the Agroforestry Parklands of Nigerian Humid Savanna," *West African Journal of Applied Ecology*, vol. 5, pp. 31-39, 2004.
- [8] R. Adeyemo, J. T., P. T. Oke, Owombo, and O. Lanlokun, "Economic Efficiency of Shea Butter Production in Oyo State, Nigeria," *SAAT FUTO*, vol. 18, pp. 2017-2023, 2015.
- [9] N. Abubakar, Abdullahi, and M. B. Jiya, "Unlocking the Potentials in Shea Butter Value Chain: Mapping and Profit Share of Key Actors in Katcha Local Government Area, Niger State Nigeria," *Equity Journal of Science and Technology*, vol. 7, pp. 82-92, 2020.
- [10] M. P. Onikoyi, S. A. Tijani, and J. A. Oluwasusi, "Factors Associated With Shea Butter Processing in Kwara State, Nigeria," *International Journal of Agriculture Innovations and Research*, vol. 2, pp. 1473-2319, 2014.
- [11] B. Gbolagade, D. Olaleye, and S. Komolafe, "Assessment of Indigenous Methods of Processing Shea Butter Among Women in Ilorin East Local Government Area of Kwara State, Nigeria," *Journal of Agricultural Sciences*, vol. 60, pp. 199-210, 2015.
- [12] K. Natukunda, D. R. Kugonza, and C. C. Kyarisilima, "Indigenous Chickens of Kumuli Plains in Uganda: II. Factors Affecting their Marketing and Profitability," *Livestock Research for Rural Development*, vol. 23, p. 221, 2011.
- [13] H. K. Ibrahim, A. Muhammad-Lawal, A. F. Adesina, A. B. Muhammed, and A. Ibrahim, "Economic Sustainability of Sheabutter Production in Kwara State, Nigeria," *Ethiopian Journal of Environmental Studies & Management*, vol. 9, pp. 987-996, 2016.
- [14] L. S. Ololade and F. A. Ibrahim, "Assessment of the Contribution of Shea Butter Processing to Poverty Reduction Among Women in Kwara State, Nigeria," *Journal of Sustainable Development in Africa*, vol. 16, pp. 1-12, 2014.
- [15] I. D. Garba, S. A. Sanni, and C. O. Adebayo, "Analyzing the Structure and Performance of Shea Butter Market in Bosso and Borgu Local Government Areas of Niger State, Nigeria," *International Journal of U- and E-Service, Science and Technology*, vol. 8, pp. 321-336, 2015.