An assessment of the value chain of shea in Borgu area of Niger state, Nigeria

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Introduction

The essence of developing commodity value chains should be to ensure the attainment of maximum quality of produce and products, good reward for value created and added by actors and the provision of level playing ground to all actors/players along the chain. In recent times, the shea tree has gain prominence and has attained the status of an economic tree in regions where it is domiciled. This is because the harvested nut has several domestic and industrial uses (Jamala et al., 2013). Nigeria accounts for 62 percent of the estimated 600,000 metric tons produced in West Africa (Enaberue et al., 2011). The tree however, is endangered due to the good qualities of the trunk as a slow burning fuel wood (Aderibigbe et al., 2017). It has therefore attracted protection against extinction from concerned agencies in some African countries (Buyinza and Okullo, 2015). The high export value and acceptability of the butter by a growing number of local consumers has attracted more players in the shea value chain. In Nigeria, the processing of the shea is mainly carried out in the rural areas where the nuts abound in the wild. Hence, key players in the chain of activities leading to the delivery of the final product to the consumer are in the rural area.

The full range of activities required to produce a product or service from inception through different phases of processing, to delivery of final product to consumers and the final disposal after use is referred to as value chain (Mayoux and Mackie, 2009). Ensuring the availability of quality products in a market requires significant development of the commodity chain. The availability of market for a commodity stimulates research and development for the commodity chain, hence, the economic value available for players along the commodity chain necessitates the placement of a distribution structure that will facilitate equitable reward for work done by each player. The shea value chain in Nigeria has not been well investigated, the literature available show that most of the works dwelled on profitability (Tiamiju et al., 2014), economic analysis of the plant (Garba et al., 2011; Salawu et al., 2014), efficiency (Adeyemo et al., 2015) and socioeconomic analysis (Jamala et al., 2013). Hence, this study sought to add to the literature of the shea nut value chain in the area...
of value in Nigeria. Furthermore, little or no study has been carried out identifying the players in the chain and the value addition component between the linkages. Consequently, a paucity of information exist in that regard. It is therefore necessary for the linkages within the shea value chain to be examined. This is because shea nut harvesting and processing have the capability of significantly increasing income opportunities of the local people by providing livelihood strategies (Ani et al., 2012). Furthermore, literature has shown that sale of shea products add to the family income in Africa, this can further be enhanced through improved processing and value addition (Saka et al., 2004); for this to happen, a proper understanding of the chain is critical. It is against this backdrop that this study assessed the shea value chain by identifying the actors in the chain and estimating the value added and margin of the actors.

Materials and Methods

Study area

The study was carried out in Borgu Local Government Area of Niger State. A survey was administered and conducted in four communities in area. The study area was purposively selected due to the high shea nut harvesting and processing activity in the area.

Source of data and sampling technique

Primary data were collected and utilized for this study, respondents were interviewed using a structured questionnaire. Multistage sampling procedure was employed for the study where four communities in the local government area were selected for the study. This is because of the concentration of players engaged in shea nut harvesting and processing in the area. The selected communities are old Dogongari, old Kurwasa, Karabonde and Lesigbe. Subsequently, a random selection of one hundred and forty respondents were sampled and interviewed (Table 1).

Table 1. Distribution of Sample collected from communities in the study area

| Community       | Sample | Percentage |
|-----------------|--------|------------|
| Old Dogongari   | 35     | 25         |
| Old-Kurwasa     | 35     | 25         |
| Lesigbe         | 35     | 25         |
| Karabonde       | 35     | 25         |
| Total           | 140    | 100        |

Source: Field Survey, 2017

Analytical Techniques

Descriptive statistics

Descriptive statistics such as mean, frequency and percentage were used to describe the demographic characteristics of the respondents involved in the processing activities of the shea nut.

Value addition analysis

The value addition analysis was used to estimate the value added to the shea nut being processed into butter by various chain participants as specified below:

\[ VA = DP - CI \]

where, VA = value added, DP = disposable price of output, and CI = cost of input.

Thus, the value added by a chain participant/actor should further improve the quality of the product and hence attract higher price from the market.

Results and Discussion

Demographic characteristics of shea nut processors

Descriptive analysis of the data collected shows that majority (66.2%) of the respondents were within the age group of 20 - 50 years (Table 2).

Table 2. Distribution of shea nut pickers/processors by demography

| Variable                        | Frequency | Percentage (%) |
|---------------------------------|-----------|----------------|
| **Age range**                   |           |                |
| 20 – 30                         | 26        | 18.6           |
| 31 – 40                         | 32        | 22.8           |
| 41 – 50                         | 35        | 24.8           |
| 51 – 60                         | 36        | 22.5           |
| 61 – 70                         | 11        | 7.8            |
| Total                           | 140       | 100            |
| **Gender**                      |           |                |
| Male                            | 0         | 0              |
| Female                          | 140       | 100            |
| Total                           | 140       | 100            |
| **Marital status**              |           |                |
| Single                          | 11        | 7.9            |
| Married                         | 100       | 71.4           |
| Divorced                        | 9         | 6.4            |
| Widowed                         | 20        | 14.3           |
| Total                           | 140       | 100            |
| **Years of experience**         |           |                |
| 3 – 6                           | 30        | 21.4           |
| 7 – 12                          | 41        | 29.3           |
| 13 and above                    | 69        | 49.3           |
| Total                           | 140       | 100            |

Source: Field Survey, 2017.

This indicates that most of the shea nut processors in the study area are in the productive stage of life, and are therefore capable of handling the labor demands of task. A small number of the respondents in the study area are in the age group of 61-70 years having (7.8%). The processing of the shea nut is labor intensive, aged people may find it difficult cope with the processing activities most especially when such individuals have to carry out the processes themselves. Further analysis reveals that all of the respondents involve in shea nut processing in the
area were females. This implies that women are the dominant group in the shea nut processing business. This finding is corroborated by the reports of Saka et al. (2004), NEPC (2006), and Jamala et al. (2013) who reported that majority of players involved in shea nut processing were women.

Regarding marital status of the respondents, result revealed that a majority (71.4%) of the respondents were married with just a few that were single, widowed or divorced. These groups of chain players represent 7.9%, 14.3%, and 6.4% respectively. In every human endeavor, specialization is attained by experiences acquired through years spent on the job; number of years spent on a particular trade or endeavor translates to experiences that can be used to improve the processes involved. The study revealed that majority (49.3%) of the respondents had 13 years and above of processing shea nut, also 29.3% had shea nut processing experience of 7-12 years. The implication of this finding is that years of experience afford the respondent the leverage to master the processes involved in the conversion of shea nut into butter. Hence, efficiency can be said to improve over time.

Shea value chain mapping in the study area

The chain of activities in the shea nut trade starts with the pickers who on daily basis visit the forest very early in the morning to harvest shea fruits that have fallen to the ground over the night (Figure 1). This group of individuals consists of mostly children and women. The flesh of the fruit is removed thereafter by the pickers to access the nut which is of value. The fruits are then dried and shelled: This is the first stage in the chain. There are two categories of pickers, those who collect the nuts and sell to marketers and those who double as processors (picker/processor). The sole pickers then sell off the shelled nuts to marketers at ₦6000 for a 75 kg of nuts; the marketers bag the shelled nuts and store for onward linkage with markets in neighboring Republic of Benin. However, the picker/processor prepares the nuts for processing into butter for local consumption, this is the second stage. There are cases where the sole picker sells the nuts to the picker/processor, this happens when there is a scarcity of the nuts (out of season) and the marketers are not buying. Such transactions are usually carried out at a negotiated low price.

The third stage in the shea chain is the processing of the nut into butter this is the stage where the bulk of the value addition in the shea chain is carried out. The picker/processor is the main actor in this stage. The main activity in this stage is the administering of the various procedures to extract the butter from the nuts (Figure 2). The activity in stage three is depicted in Figure 2 as adopted and modified from Oil Seeds Association of Nigeria, OSAN (1997). Stage three ends with the processed shea butter which is then stored in containers ready for purchase by marketers who are basically wholesalers (stage four). Further down the line (stage five) retailers in the cities purchase the shea butter from the wholesalers for sale to final consumers. The retailers usually purchase the butter in 20 to 25 liters container; they then repackage the butter in small containers of approximately one liter for sale to the final consumers. Some retailers add fragrances and other additives to the butter for preferences.

Estimation of the value added on shea nut processing chain

Changing the current location of a product and time of availability; and altering the set of characteristics of a commodity to a more preferred characteristics by the consumer in the market place can be termed as value addition (Boland, 2009). The objective is to satisfy the consumers’ preferences. Table 3 show the estimates of the value added through the processing of shea nut by various players in the chain. Since the pickers pick the shea nuts for free in the wild, their investment in acquiring the nuts is the time and energy they invest for the collection. For the quantity of nuts under consideration (22.5 kg), it takes on average,
one hundred and twenty minutes to pick from the wild depending on the availability and proximity of trees. Hence, valuing the shea nut based on man day (₦125/hr) used for collection, 22.5 kg of shea nuts cost ₦250.

The nuts then undergo roasting, grinding and finally, extraction of the oil by the local processor. The quantity of shea butter extracted from a 22.5 kg quantity of nuts is on average 7.5 liters. The processor then sells this quantity (7.5 liters) of butter to the shea butter marketer at ₦1800. The shea butter marketer adds value of ₦600 on this quantity through the provision of space and package utility. Thereafter, the retailer buys the 7.5 liters of shea nut butter at ₦2400 from the marketer. The retailer adds a value of ₦5600 through further refinement and repackaging and sells the product to the final consumer at ₦8,000. Considering the magnitude of value added by the players in the chain, the retailer adds the most, followed by the processor (Table 4). It is imperative to note that the picker adds the list value in the chain. This may translate to a low reward/return to the picker for services rendered in the chain. The implication of this for the sole picker would be that the picker may be trapped in a vicious cycle of low income. Also, the Shea butter retailer adds the largest value among the players in the chain, it should be expected that he gets the highest reward in the chain.

**Estimating marketing margins of shea nut chain players**

The actors in the shea value chain in the study area have market margins indicating that all the players are rewarded for adding value in the chain (Table 4). The picker/processor has a total margin of ₦1050 (₦150 for picking and ₦900 for processing), whereas the shea nut marketer has a margin of ₦250 and finally the retailer, who has a margin of ₦3460. Recalling that that the retailer adds the highest value in the shea nut chain he/she therefore receives the largest reward (margin) among the actors in the chain. The players having high rewards in the chain are the processor and the retailer, the retailer however, has the highest reward. The point of entry for value chain development of any commodity is important; this is because the point of entry determines the level of impact to be achieved concerning the objective of the intervention. Concerning the reward (margin) in the shea value chain in the study area, the sole picker gets the least margin, however it is the sole picker that braves the conditions of the wild to harvest and make the nuts available. Furthermore, the sole picker is the least in terms of economic endowment. Hence, the present arrangement is not in the best interest of the sole picker in terms of the total potential value available for all players in the shea nut chain.

The essence of developing commodity value chains should be to ensure the attainment of maximum quality of produce and products, good reward for value created and added by actors and the provision of level playing ground to all actors/players along the chain. The attainment of maximum satisfaction by all players through receipt of good reward should be the key goal. Hence, considering the shea nut value chain as identified in this study, it appears that the sole picker is at a disadvantage if he/she only picks and sells the nuts. The large margin made by the processor in this chain under study is due to the fact that the processor also doubles as a picker, thus acquiring the nuts directly from the wild for free and processing into shea butter.
Table 3. Activity and cost involved in processing 7.5 litres of shea butter

| Actors                  | Processes                        | Cost (₦) |
|-------------------------|----------------------------------|----------|
| Picker                  | Shea nut head/pan (22.5 kg)      | 150.00   |
|                         | Cost of transport                | 100.00   |
|                         | **Total**                        | **250.00**|
| Local processor         | Shea nut                        | 250.00   |
|                         | Roasting                        | 100.00   |
|                         | Milling                         | 100.00   |
|                         | Mixing                          | 100.00   |
|                         | Extraction                      | 200.00   |
|                         | **Total**                        | **750.00**|
| Shea butter marketer    | Shea butter                      | 1800.00  |
|                         | Package                         | 150.00   |
|                         | Transport                        | 200.00   |
|                         | **Total**                        | **2,150.00**|
| Shea butter retailer    | Shea butter                      | 2400.00  |
|                         | Packaging/Container              | 1640.00  |
|                         | Transport                        | 500.00   |
|                         | **Total**                        | **4,540.00**|
| Final consumer          | 8 units of ≈ 1 liter shea butter | 8,000.00 |

Source: Field Survey 2017

Table 4. Value added by players for processing 7.5 liters of Shea butter

| Actor                  | Product            | Value (₦) | Value added (₦) | Percent Value added |
|------------------------|--------------------|-----------|-----------------|---------------------|
| Picker                 | Unsorted shea nut  | 250.00    | 250.00          | 3.10                |
| Processor              | Shea butter        | 1800.00   | 1550.00         | 19.38               |
| Shea butter marketer   | Shea butter        | 2400.00   | 600.00          | 7.70                |
| Shea butter retailer   | Shea butter        | 8000.00   | 5600.00         | 70.00               |

Source: Authors’ estimation

Table 5. Marketing margins for players in the value chain for 7.5 liters of Shea butter

| Player/actor            | Cost   | Revenue  | Margin (₦) | Percent Margin |
|-------------------------|--------|----------|------------|----------------|
| Picker                  | 100.00 | 250.00   | 150.00     | 3.05           |
| Local Shea butter       | 750.00 | 1800.00  | 1050.00    | 21.38          |
| processor               |        |          |            |                |
| Shea butter marketer    | 2150.00| 2,400.00 | 250.00     | 5.09           |
| Shea butter retailer    | 4540.00| 8000.00  | 3460.00    | 70.47          |

Source: Authors’ estimation

Conclusion

The economic potential of shea nut is enormous, this is because its contribution to the wellbeing of players in the value chain is robust. There are four key players identified in the shea value chain in the study area, these players provide both space and form utility to the final consumer. The shea value chain rewards the players based on the magnitude of value added. The study therefore, recommends that since majority of the pickers and processors are females, a gender-based study of the shea value chain will further reveal potentialities for empowering women in the study area. Furthermore, to give leverage to the sole picker in terms of the size of market margin she attracts, it may be expedient to empower the sole picker to get involved in the processing of the nuts.

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