

Analysis of the Socio-Economic Profile of Tamarind Processors and Marketers in Selected States of Nigeria

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Abstract

Tamarind (*Tamarindus indica* L.) is an underutilized tree crop with significant economic and nutritional potential in Nigeria. Processing activities surrounding tamarind contribute to rural livelihoods through income generation, employment creation, and value addition. However, limited empirical information exists regarding the socio-economic characteristics of actors involved in tamarind processing and Marketing. This study analyzed the socio-economic profile of tamarind processors and marketers in selected states of Nigeria. Primary data were collected from tamarind processors through a structured questionnaire administered to respondents in Kano, Kaduna, and Nasarawa States. Descriptive statistical tools such as frequency distribution, percentages, and mean values were employed to analyze the data. The findings revealed that the majority of processors were male and within the economically active age group, with moderate household sizes and varying levels of educational attainment. Most processors had several years of processing experience but operated at small-scale levels with limited access to credit and modern processing facilities. The study concludes that socio-economic factors play a significant role in shaping the participation and productivity of tamarind processors. It recommends improved access to credit, training on improved processing techniques, and strengthening of cooperative associations to enhance productivity and income among tamarind processors.

Keywords:

Tamarind processing, socio-economic characteristics, value addition, rural livelihood, Nigeria

Introduction

Agriculture remains a major contributor to rural livelihoods in Nigeria, providing employment and income to a significant proportion of the population. Beyond conventional staple crops, non-timber forest products and underutilized tree crops play an important role in supporting household income and food security in many rural communities. One such crop is tamarind (*Tamarindus indica* L.), a multipurpose tree species widely distributed across tropical and semi-arid regions of Africa.

Tamarind is valued for its fruit pulp, which is used in beverages, condiments, food preservation, and traditional medicine. The crop possesses considerable nutritional and commercial potential due to its high content of vitamins, minerals, and organic acids. In many developing countries, tamarind contributes to rural livelihoods through harvesting, processing, and marketing activities (El-Siddig et al., 2006). Despite its economic importance, tamarind remains largely underexploited in Nigeria, and most processing activities are carried out at a small scale using traditional techniques.

Processing is a critical component of the agricultural value chain because it enhances the shelf life, marketability, and value of agricultural products. For tamarind, processing activities such as pulp extraction, drying, packaging, and storage help improve product quality and market value. These activities also provide income opportunities for rural households, particularly women who are often involved in small-scale agro-processing enterprises.

Understanding the socio-economic characteristics of processors is essential for designing effective policies and interventions aimed at improving productivity and profitability within the tamarind value chain. Socio-economic variables such as age, education, household size, and processing experience influence decision-making,

technology adoption, and participation in agro-processing activities (Olagunju et al., 2018). Despite the growing interest in value addition to agricultural products, empirical studies on tamarind processing in Nigeria remain limited. Most available studies have focused on production, utilization, and nutritional properties of the crop, with little emphasis on the socio-economic attributes of processors involved in value addition activities.

This study therefore examines the socio-economic profile of tamarind processors in selected states of Nigeria, namely Kano, Kaduna, and Nasarawa States. The findings will contribute to a better understanding of the demographic and economic characteristics of processors and provide useful information for policymakers and development agencies seeking to promote tamarind value chain development.

The specific objective of the study is to analyze the socio-economic characteristics of tamarind processors in the selected states.

2. Methodology

Study Area

The study was conducted in three states in Nigeria: Kano State, Kaduna State, and Nasarawa State. These states were selected due to the prevalence of tamarind trees and active participation of rural households in tamarind processing and marketing activities.

Kano and Kaduna States are located in the North-West region of Nigeria and are known for vibrant agricultural markets and agro-processing activities. Nasarawa State, located in the North-Central region, is characterized by significant forest resources and widespread tamarind tree distribution.

Sampling Technique and Sample Size

A multistage sampling technique was employed for the study. In the first stage, the three states were purposively selected based on the presence of tamarind processing activities. **Sampling procedure and sample size**

A multistage sampling procedure was employed to select the study sample.

Step 1:

Three states Kano and Kaduna and Nasarawa, were purposively selected due to their high levels of tamarind processing and marketing activities.

Step 2:

Within each state, Purposive sampling was used to select four (4) Local Government Areas (LGAs) with the most significant tamarind processing and marketing activities.

Step 3:

Subsequently, one (01) community each was selected using a simple random from a local government area to make it four communities each in a state. Yamanes formula was used to determine the number of respondents to be allocated to each states from the sample frame. Yamanes formular states:

$$n = N \div 1 + N(e^2)$$

n = sample size

N = Estimated Sample Size

e = margin error (5% or 0.05)

Kano Sample Size;

N = 300 processors and marketers (ADP Kano)

n = ?

$$n = 300 \div 1 + 300(0.05)^2$$

n = 171(Kano)

Kaduna Sample Size:

N = 200 Processors and marketers (ADP Kaduna)

$$n = 200 \div 1 + 200(0.05)^2$$

n = 133 (kaduna)

Nasarawa State Sample Size

N = 100 Processors and marketers (ADP Nasarawa State)

$$n = 100 \div 1 + 100(0.05)^2$$

n = 80

Step 4:

Proportionate sampling percentage was used to determine the number of respondents per community.

Proportionate sampling percentage was used for each LGA's

$$n_i = (N_i \div N)n$$

$$\text{Percentage} = (N_i \div N) \times 100.$$

Where N_i = population of the subgroup

N = Total population

$$\text{Kano} = \left(\frac{171}{384}\right) \times 100 = 42.75 \text{ (43\% for the 4 LGA.'s)}$$

$$\text{Kaduna} = \left(\frac{133}{384}\right) \times 100 = 35\% \text{ for the 4 LGA's}$$

Nasarawa = $80 \times 100 \div 384 = 20\%$ for the 4 LGA's

= 20%

Sampling Frame and Sample Size

States under study	Sample Frame	LGA's selected	Numbers of Communities selected	Numbers of respondents to select	Estimated population
Kano State	300 marketers and processors (ADP Kano State)	Madobi, Dawakin - Tofa , Kano-South and Kano-Central	04	44.5% respondents from each community using proportionate sampling (171)	300
Kaduna State	200 marketers and processors (ADP Kaduna State)	Chikun Zaria, Kaduna-South and Kaduna-North	04	34.6% respondents from each community using proportionate sampling (133)	200
Nasarawa State	100 Processors/Marketers (ADP Niger State)	Lafia, Nasarawa Eggon, Akwanga, Awe	04	20.8% 20respondents from the 4community each.(80)	100
3 States	600	12 LGA's	12 Communities	384 Respondents	600 Population

3.3.Data collection

Data for the analyses were collected from primary source, through the administration of structured questionnaire, using the multi-stage sampling technique to select 384 respondents for the study. Data were collected on variables, such as, the demographic characteristics of the respondents that is, gender, age, marital status, level of education, Family size, experiences and economic variables, such as annual income and their expenditure on Tamarind processing and marketing

Data Collection

Primary data were collected using a structured questionnaire. The questionnaire captured information on:

- Age
- Gender
- Marital status
- Educational level
- Household size
- Processing experience
- Cooperative membership
- Access to credit
- Primary occupation

Analytical Techniques

Descriptive statistical tools were used to analyze the socio-economic characteristics of the respondents. These include:

- Frequency distribution
- Percentages
- Mean values

These tools were considered appropriate because they provide a clear summary of the demographic and socio-economic attributes of the processors

3. Results and Discussion

Age Distribution of Tamarind Processors and Marketers

The age distribution of respondents across the three states shows that most participants were within the economically active age group. In Kano State, the mean age of processors was 45.25 years while marketers had a mean age of 38.68 years. Similarly, processors in Kaduna State had a mean age of 45.83 years and marketers had a mean age of 42.30 years.

In Nasarawa State, the mean age of processors was slightly lower at 37.5 years, while marketers had a mean age of 37.17 years.

These results suggest that tamarind processing and marketing activities are largely undertaken by middle-aged individuals who possess the physical strength and business experience necessary for such enterprises.

Gender Distribution

Across the three states, tamarind processing activities were largely dominated by males, whereas marketing activities were predominantly undertaken by females. In Kano State, males constituted 72.93% of processors compared to 27.07% females, while females dominated marketing with 57.89%. A similar trend was observed in Kaduna State where 61.04% of processors were male, but marketing was heavily dominated by females (88.68%).

In Nasarawa State, however, a different pattern was observed among processors where females constituted the majority (62.50%), while males accounted for 37.50%. Marketing in Nasarawa was also dominated by females (57.53%).

These findings indicate a gender-based division of labour within the tamarind value chain, with men playing a greater role in processing activities in most states while women dominate marketing activities. The strong participation of women in marketing aligns with the traditional role of women in petty trading and agricultural marketing across rural Nigeria.

Marital Status

Marriage was the dominant marital status among respondents across all three states. In Kano State, 88.72% of processors and 76.32% of marketers were married. Similarly, in Kaduna State, 83.12% of processors and 80.39% of marketers were married. In Nasarawa State, 87.50% of processors and 79.45% of marketers were also married.

The predominance of married individuals suggests that family structures play an important role in tamarind processing and marketing activities. Married individuals often rely on household members for labour and business support.

Educational Level

Educational attainment varied among respondents across the three states. In Kano State, the majority of processors had either secondary education (29.32%) or Qur'anic education (29.32%), while marketers largely possessed secondary (55.26%) and tertiary education (34.21%).

In Kaduna State, most processors had primary education (44.74%), followed by secondary education (36.84%). Among marketers, secondary education was most common (41.51%).

In Nasarawa State, a larger proportion of processors had no formal education (37.50%), while marketers mostly had primary (39.73%) or secondary education (38.36%).

These findings suggest that although many participants possess basic education, higher levels of education remain limited among processors, particularly in Nasarawa State. Education is important for enhancing managerial ability, adoption of improved processing technologies, and access to market information.

Household Size

Household sizes differed across the three states. Processors in Kano State had the largest mean household size (11.28 persons), followed by Kaduna State (8.67 persons), while Nasarawa State had the smallest average household size (5.62 persons).

For marketers, the mean household sizes were 6.18 persons in Kano, 6.86 persons in Kaduna, and 6.04 persons in Nasarawa.

Large household sizes, especially among processors in Kano State, may provide family labour that supports processing operations and reduces labour costs.

Household size is an important factor influencing participation in agro-processing activities. Larger households often provide family labour for processing operations, thereby reducing labour costs and increasing productivity.

Business Experience

Business experience varied significantly across the three states. Processors in Kano State had the highest average business experience (17.38 years), indicating a more established processing sector. In contrast, processors in Kaduna State had an average of 9.27 years of experience, while processors in

Nasarawa State had the least experience with a mean of 6.87 years.

For marketers, the mean business experience was 9 years in Kano, 8.18 years in Kaduna, and 6.88 years in Nasarawa.

These results suggest that tamarind processing and marketing activities are relatively more developed in Kano State compared to Kaduna and Nasarawa States.

Membership of Cooperative or Union

Membership in cooperative associations was generally low across the three states. In Kano State, 68.42% of processors and 78.95% of marketers were not members of any union. In Kaduna State, the proportion of non-members was even higher, with 74.03% of processors and 90.57% of marketers not belonging to any cooperative.

Similarly, in Nasarawa State, 87.50% of processors and 91.78% of marketers reported no membership in any association.

Low cooperative participation may limit access to credit facilities, extension services, and training opportunities that could enhance productivity and marketing efficiency.

Cooperative Membership and Access to Credit

The study also revealed limited access to formal credit among tamarind processors. Many processors rely on personal savings or informal lending sources to finance their operations. Membership in cooperative societies was relatively low, which may limit access to financial support, training opportunities, and collective marketing.

4. Conclusion

The comparative analysis reveals several important patterns across the three states. Tamarind processing activities are generally dominated by males in Kano and Kaduna States, while females play a stronger role in Nasarawa State. Marketing activities are consistently dominated by females across all states. Most respondents are married and fall within the economically active age group, indicating that tamarind enterprises serve as an important livelihood activity for rural households.

However, cooperative membership remains low across the three states, which may limit access to financial resources, technical training, and collective marketing opportunities. Additionally, processors in

Kano State appear to possess more years of business experience compared to those in Kaduna and Nasarawa States.

These findings highlight the need for targeted interventions aimed at improving access to credit, strengthening cooperative organizations, and providing training on improved processing technologies in order to enhance productivity and profitability within the tamarind value chain.

5. Recommendations

Based on the findings of the study, the following recommendations are made:

Government and development agencies should provide training programs on improved tamarind processing techniques.

Access to credit facilities should be improved to enable processors expand their operations.

Formation and strengthening of cooperative societies should be encouraged to facilitate access to financial resources and market opportunities.

Policies promoting the development of tamarind value chains should be implemented to enhance rural income and employment.

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