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# Marketing of African locust bean (*Parkia biglobosa, Jacque Ben*th) in Arigidi-Akoko, Ondo State, Nigeria: Implications for poverty reduction

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**Abstract**
This study examined marketing of African locust bean and its implications on poverty reduction in Akoko North West Local Government Area of Ondo State. Simple random sampling technique was used to select 172, 80, 50, and 42 respondents from Arigidi-Akoko, Imo-Arigidi, Arigidi-Oja and Agbaluku respectively. Apart from reconnaissance and physical ground surveys, data were collected with structured questionnaires. The data were subjected to chi-square analysis and descriptive statistical tools. Socio-economic variables like reliability on locust bean trade for sponsoring ward education is significantly dependent on monthly income from locust bean trade ($P < 0.001$) and this was consolidated by another variable like reliance on locust bean trade for offsetting household expenses and this is also significantly dependent on monthly income from locust bean trade in the study area ($P < 0.005$). The marketing channels were retail (processed bean) and wholesale (raw) and monthly income from the trade in the study area was between ₦10,000 and ₦70,000. The challenges of this trade were unavailability of this product in large proportions in the area, inadequate transportation, insufficient shed in the market squares, stigmatization by other passengers during transportation, inadequate storage facilities among others. The locust bean trade impacted Arigidi positively. For promotion of the trade in the area, relevant government agencies should promote local propagation of the tree; aid prompt transportation; build more shelters in various market, and modernized storage technique/packaging should be worked upon in general to make the product more attractive.

## 1. Introduction

There is a growing awareness of the contribution of Non-Timber Forest Products (NTFPs) to household economy, food security, national economy and conservation of biodiversity. Non-Timber Forest Products provide food, medicine, fibres and cash income for rural households (Okafor, 1994).

In developing countries, 80 percent of the people use forest products for food and personal care. For example in Ghana, Karite butter is used as a cosmetic product

distributed by the international (body shop) chain of shops.

In Nigeria, food security of rural dwellers is improved by growing trees in the home gardens and on farms. Leaves, rattan, honey, sap, gums from the small scale industries are important sources of income (Okafor, 1994)

*Parkia biglobosa* seeds have been identified as a typical example of Non-Wood Forest Products (NWFPs) and the differences between the commonly used NTFPs and NWFPs was emphasized in (FAO, 2000). It was clearly stated that the term NWFPs differs from the commonly used NTFPs in excluding all wood while NTFPs includes wood for uses other than for timber. The need to carry out studies on marketing of *Parkia biglobosa* seeds becomes necessary since this is a mental concept and it is a crucial stage in forestry because of the number of stages through which forest products pass before they get to the final consumer.

Forest products marketing are all business activities involved in getting forest products of all kinds including services where applicable from the hands of the producers into the hands of the final consumer (Popoola et al, 1998). It does not mean that marketing takes place after the products have come off the production line. Rather, marketing activities such as product planning and market research precede production. Hence, the needs of the market usually dictate what will be produced, this according to Milton (1960) in (Popoola et al, 19998).

The above definition also distinguishes marketing from selling by emphasizing that marketing focuses on the needs of buyers. It is pre-occupied with the idea of satisfying the needs of the customers by means of products and services and by a whole cluster of customer deriving satisfaction associated with creating, delivering and consuming the products selling on the other hand is pre-occupied with converting goods and services into cash.

Marketing channels are also an important aspect of marketing since these are the various ways in which goods are passed from producers to consumers.

Marketing channels are the sequence of intermediaries or middlemen and markets through which goods pass en-route from producers to consumers. They are also termed outlets or manner through which information about specific commodity is dispersed over a large area especially to places where they are needed (Adegeye et al, 1985).

Non-Timber Forest Products' trade involves a large number of people such as gatherers, producers, wholesalers and retailers operating at different levels of trading channels. Marketing channels also vary from one commodity to another; it may be a single channel system where the flow of goods and services is between the producer and consumer. It may be a multiple stage flow where the producer or gatherer sells to the wholesaler who in turn sells to the retailer who later sells to the wholesaler who in turn sells to retailer who later sells to the final user. The necessity of the channels is to increase the utilization of all factors of production to the maximum (Stella, 1993)

Arigidi people are not only known to depend on African locust bean for their household delicacy but also seen as the major processor and marketer of the product in Ondo State to the extent of noticing that the marketing of this product has gone beyond the state which is a good indicator of its economic viability.

In this light, since immense potentials of African locust bean have been realized, it is of paramount importance and worthwhile to carry out a study that would eventually improve marketing of the product with a view to be used as a tool for poverty reduction in the area or country at large, by investigating the trade marketing channels of African locust bean, examining the socio-economic implications of locust bean trade on poverty reduction and identifying challenges associated with the marketing of African locust bean with a view to suggesting mitigations.

### Hypothesis

$H_o$: Socio-economic implications of locust bean trade impact on poverty reduction in the area are not significant.

$H_A$: Socio-economic implications of locust bean trade impact on poverty reduction in the area are significant.

## 2. Methodology

### 2.1. The Study Area

The study area is Arigidi Akoko in Akoko North West Local Government area of Ondo State and is geographically located on Latitudes $7^o$ $33^1$ N-$7^o45^1$N and longitudes $5^o37$E-$5^o57^1$E (Fig1). The entire state has two distinct seasons i.e the rainy season being from March to October and the dry seasons which runs through November to February. The mean annual rainfall is about 1230mm and the mean annual temperature is $27^0$C while the relative humidity is 77.8%.

The area is located in the Northern part of Ondo state and has an estimated population of 218,343 people based on the 1991 census and has also been projected to have a population estimate of 355,858 by 2007 using the projected 3.1% annual growth rate. The most important towns in the local government are Oke-agbe (The local government headquarters), Ajowa, Irun, Ogbagi, Afin, Oyin, Erusu, Ikaramu and Arigidi.

The villages in these towns are many and have dispersed settlement pattern and some of these towns are surrounded by rocks, more prominently is the local government headquarter, Oke-Agbe. Interestingly, the rocky environment reflected in the town's name formation (in Yoruba language). The natural vegetation pattern can be characterized as rainforest. The entire local government area is endowed with various forest products and therefore contributes immensely to the timber production in Ondo state.

### 2.2. Data Collection, Sampling Procedure and Data Analysis

Identification of concerned respondents was done through locust bean sellers' association in Arigidi, visitation to the processing sheds and household's consultations. The respondents were made up of processors of locust bean, processed locust bean sellers, raw locust bean sellers, and people living within the town, especially experienced Aged people.

However, a simple random sampling procedure was used for the study based on the identified number of concerned respondents got during the reconnaissance survey. A total of 3,446 concerned respondents were identified in the whole Arigidi Akoko metropolis where 1,601 were recorded at Imo Arigidi, 1001 at Arigidi-Oja and 844 were recorded at Agbaluku which are the three major settlements in the town.

Field survey which entails detailed appraisal of the various aspects of the objectives were carried out through the use of structured questionnaire, the content comprised open and close-ended questions.

At 5% sampling intensity, 80 respondents were reached in Imo Arigidi, 50 were reached in Arigidi-Oja and 42 were finally reached in Agbaluku respectively, making a total of 172 respondents that were sampled in the entire town.

The information obtained was analyzed using descriptive statistical tools such as percentages analysis, as well as flow chart.

Consequently, in order to ascertain the socio-economic implication of locust bean trade on poverty reduction in Arigidi Akoko, data on monthly income, household sustainability and reliability in the business for sponsoring ward education were used for testing the level of significance by using chi-square analysis.

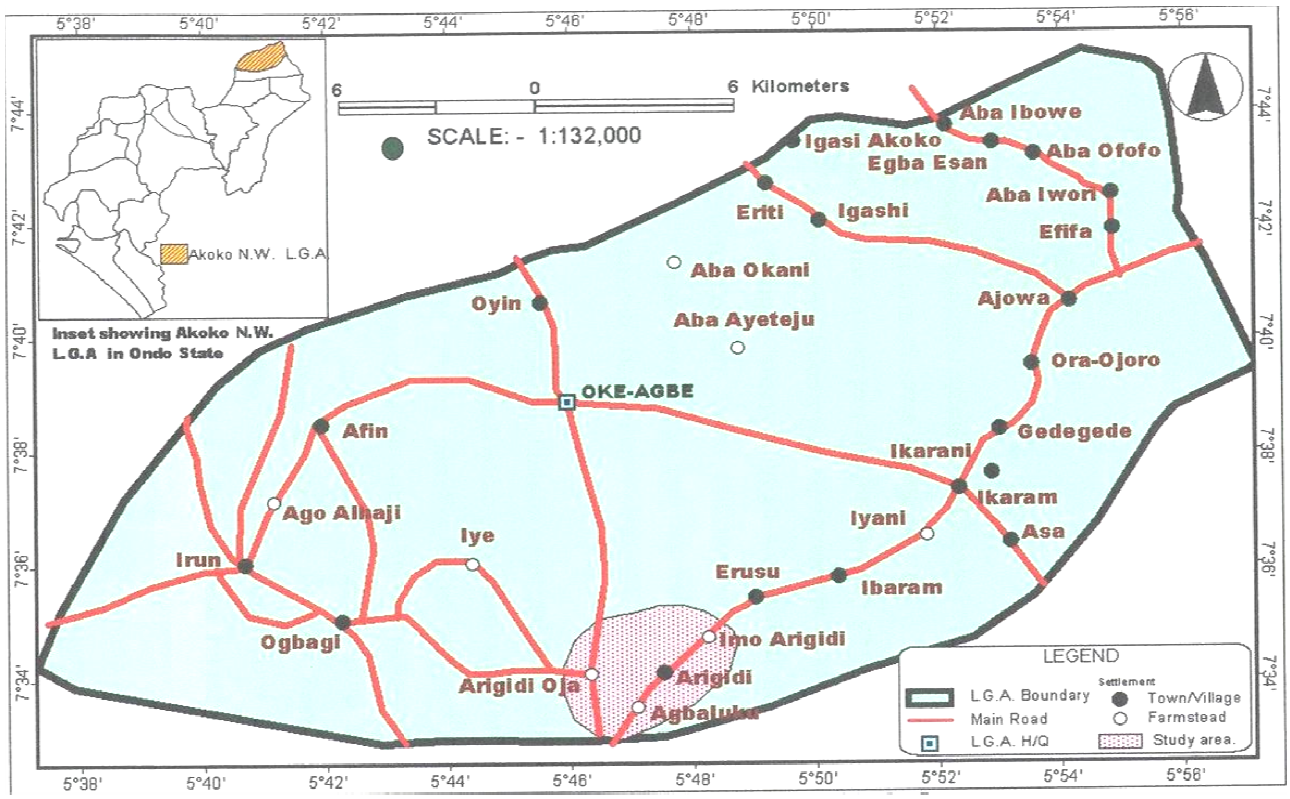


***Fig. 1.*** *Map of Akoko N.W. L.G.A. showing Study Area*

## 3. Results

### 3.1. Socio-Economic Characteristics

The results of this study show that locust bean processing and trading in the study area are predominantly female occupation. It was also confirmed that locust bean marketing in the study area is a very profitable venture which can be used as a tool for poverty reduction.

Table 1 shows the socio-economic characteristics of respondents and reveals that locust bean processing and trading are predominantly female occupation; consequently, 97.7% of respondents interviewed were females. The study also revealed that those between ages 41 and 50 years were 30.2%. Those in the category of 50 years and above were 26.79% while 22.1% of them had ages ranging from 21-30. Those with ages between 31 and 40 were 16.3% and those below 20 years were 4.7% respectively. The trend in age revealed that the occupation is more of that of the aged people in the area, although the youth were also not left out in the race for survival. Most respondents (66.3%) were married, even though the marital status' distribution has really depicted that the locust bean processing's occupation is occupation for all, irrespective of their status but more advantageous for both the married and divorcee with children in the area of assistance by children in processing operation.

Majority of the respondents had primary and secondary education. Specifically, 45.3% of them had secondary education, 40.7% had primary education, 11.6% had no formal education, 1.2% had National Certificates of Education and another 1.2% had National diplomas. It is generally believed by the respondents that the processing operations do not require high level of education.

Investigating the level of respondents' experience, it was observed that 31.4% had more than 15 years experience, 25.6% had between 10 and 15 year experience, another 25.6% had experience varying between 5 and 10 years and 17.4% had less than 5 years experience in the trade. Attraction of respondents into the trade showed that majority of them were attracted by its profitability (47.7%) and this because 31.4% inherited the trade and were motivated by their parents, mostly women. 8.1% had personal interest while 1.2% declared that traveling which is associated with locust bean marketing as their hobby. Others were motivated by combinations of an array of identified interests. 54.7% of the respondents which represents the majority declared that they were endeared to the locust bean trade through learning. Majority of the respondents declared that they were endeared to the locust bean trade through learning and this is an indicator that the trade could be used as one of the tools for meeting Millenium Development Goals which it's major objective is centres around poverty reduction.

***Table 1.*** *Socioeconomic Characteristics of Respondents*

| | Frequency | Percentage |
|---|---|---|
| Gender | | |
| Male | 4 | 2.3 |
| Female | 168 | 97.7 |
| Age Class | | |
| Below 20 | 8 | 4.7 |
| 21-30 | 38 | 22.1 |
| 31-40 | 28 | 16.3 |
| 41-50 | 52 | 30.2 |
| Above 50 | 46 | 26.7 |
| Marital Status | | |
| Single | 16 | 9.3 |
| Married | 114 | 66.3 |
| Divorced | 4 | 2.3 |
| Separated | 6 | 3.5 |
| Widowed | 32 | 18.6 |
| Education | | |
| Primary | 70 | 40.7 |
| Secondary | 78 | 45.3 |
| N.C.E | 2 | 1.2 |
| N.D. | 2 | 1.2 |
| Nill | 20 | 11.6 |
| Occupation | | |
| Trader | 154 | 89.5 |
| Civil Servant | 4 | 2.3 |
| Artisan | 10 | 5.8 |
| Student | 4 | 2.3 |
| Business Experience | | |
| < 5 years | 30 | 17.4 |
| 5-10 years | 44 | 25.6 |
| >10-15 years | 44 | 25.6 |
| 15 years | 54 | 31.4 |
| Business Motivation | | |
| Profitability | 82 | 47.7 |
| Profitability/Inheritance | 4 | 2.3 |
| Inheritance/Parent-mothers' Motivation | 54 | 31.4 |
| Interest | 14 | 8.1 |
| Interest/ Motivation by friend | 6 | 3.5 |
| Financial constraint for schooling | 2 | 1.2 |
| Motivation by friend/profitability | 6 | 3.5 |
| Traveling hobby | 2 | 1.2 |
| Interest/traveling as hobby | 2 | 1.2 |
| Mode of understanding the techniques involved in the trade of Locust Bean | | |
| Learning | 94 | 54.7 |
| Hereditary | 72 | 41.9 |
| Natural gift | 6 | 3.5 |

Field survey, 2007

## 3.2. Sources of Raw Materials

Table (2a) shows the sources of raw materials, in which 68.6% of the respondents sourced their raw materials within the community, 16.3% sourced theirs from Keffi in Nassarawa State, 7.0% in Abuja, while 40% and 3.5% source from Patuji and Abuji, in Kogi State.

Generally, more than half of the respondents (68.6%), who sourced their raw materials locally, were processors while others were non-processors. The latter were those who travel to the North to buy locust bean seed. Meanwhile, it has been observed that in Nigeria, *Parkia biglobosa* can be found predominantly in the Savannah's vegetation zone of Nigeria, this study therefore agrees with the finding of (Keay, 1989).

## 3.3. Marketing Channels Identification in the Study Area

Table (2b) depicts marketing channels identification in the study area. It reveals that 68.6% of the respondents sell in retail and specifically, processed locust bean and 31.4% were wholesaler. It was amazing that no retails (raw) was identified but the reason for this was given by some of the respondents was that it would be difficult for such group of people to make profit because people (processor) would prefer to buy from the wholesalers who travels to buy to maximize profit since there would be price differentials.

However, all wholesalers identified were sellers of raw parkia beans and all retailers identified were sellers of processed bean in the area.

## 3.4. Identified Measurements Used in Selling Locust Bean in the Area

Table (2c) shows the identified measurements used in the area. 68.4% of the respondents sell in bags, half bags and mini graduating bowl while the remaining 31.4% only sell in ball per wrap.

It was observed that those who sell in bags, half bags, and mini graduating bowl were wholesalers (raw) while those who sell in ball/wrap were those who sell in retails (processed).

It was also confirmed that the weight of mini graduating bowls of raw locust bean was about 1.2kg and a bag weigh from 167.4 kg-173.4kg. A total of 140-145 mini graduating bowls could be found in a bag. Random measurement of processed (ball) of various sizes were also carried out and it was discovered that the big ball weighed 47.0g while the small one weighed 2.35g respectively.

## 3.5. Identified Price per Unit Measurement Locally

Table (2d) reveals the identified price per unit measurement locally. About 68.6% of the respondents sell ₦5 per small ball and ₦10 per big ball locally. It was observed that 27.9% of the respondents sell at ₦14, 000 per bag and ₦120 per mini graduating bowl 2.3% sells ₦13, 500 per bag and ₦120 per mini graduating bowl respectively.

According to the information of price per unit measurement locally, it was observed that the prices vary. The price differential could be traced to different sources of the raw material, as cost incurred on transportation has to be taken into consideration.

***Table 2. Raw Materials Sources,*** *Marketing Channels and Measurement Variables*

| **(a) Sources of raw materials** | | | **(b) Identified measurements used in selling locust bean in the study area** | | |
|---|---|---|---|---|---|
| **Sources** | **Frequency** | **Percentage** | **Measurement** | **Frequency** | **Percentage** |
| Raw wholesalers (in Arigidi) | 118 | 68.6 | Bag, ½ Bag, Mini graduating bowl | 54 | 31.4 |
| Abuja | 12 | 7.0 | ball/wrap | 118 | 68.6 |
| Patuji | 8 | 4.7 | | | |
| Keffi | 28 | 16.3 | | | |
| Abuji | 6 | 3.5 | | | |
| **(c) Marketing channel identification in the study area** | | | **(d) Identified price per unit measurement locally** | | |
| **Channel** | **Frequency** | **Percentage** | **Measurement/ price** | **Frequency** | **Percentage** |
| Wholesaler (raw) | 54 | 31.4 | Bag/1400 | 1 | 0.6 |
| Retailer (processed) | 118 | 68.6 | Small ball/5/big ball/10/ | 118 | 68.6 |
| | | | Bag/13500 | 1 | 0.6 |
| | | | Bag/14000 – mini graduating bowl/120 | 48 | 27.9 |
| | | | Bag/13500 – Mini graduating bowl/120 | 4 | 2.3 |

Source: Field Survey, 2007

## 3.6. List of Places Where Retailers (Processed Bean) Sell their Product

Table (3) shows the list of places where retailers (processed bean) sell their product. The list cuts across mostly the neighbouring states like Ado-Ekiti in Ekiti state, Ife in Osun state and Kabba in Kogi state. The table also shows that 27.1% of the respondents sell their products at Akure, 21.2% at Ikare while others sell their products in other neighbouring towns and distant places. The higher percentage recorded in Ikare could be attributed to nearness of the processing area to the town. Hence, the marketing of the products is spreading.

***Table 3.*** *List of Places Where Retailer (Processed Bean) Sells Their Product*

| **Measurement** | **Frequency** | **Percentage** |
|---|---|---|
| No response | 1 | 0.8 |
| Akure | 32 | 27.1 |
| Ikare | 25 | 21.2 |
| Ado-Ekiti | 4 | 3.4 |
| Owo | 6 | 5.1 |
| Lagos | 4 | 3.4 |
| Ibadan | 2 | 1.7 |
| Abuja | 4 | 3.4 |
| Ife | 3 | 2.5 |
| Akungba | 2 | 1.7 |
| Akure/Owo | 6 | 5.1 |
| Isua/Akure/Kabba | 2 | 1.7 |
| Ikare/Isua/Oka | 1 | 0.8 |
| Ibadan/Ife | 2 | 1.7 |
| Ilesha/Ife | 3 | 2.5 |
| Isua/Oka | 5 | 4.2 |
| Ikare/Akungba | 2 | 1.7 |
| Ado-Ekiti/Owo | 2 | 1.7 |
| Abuja/Lagos | 2 | 1.7 |
| Aiyesegba Ekiti/Ado-Ekiti | 4 | 3.4 |
| Oka/Oba | 2 | 1.7 |
| Akure/Isua | 2 | 1.7 |
| Airgidi Akoko | 2 | 1.7 |
| **Total** | **118** | **100.0** |

Source: Field survey, 2007

## 3.7. Cost of Transportation per Trip for Processors Marketing Outside their Processing Area

Information on Table 4 is inadequate at explaining how boxes were being changed due to the differential in prices even to the same destination, but it was gathered that those marketing their products in Akure, Owo and Ado-Ekiti could send their boxes to market without traveling with it. It was learnt that there is fixed price for such transaction which attracts ₦100 per box. This means that if a seller is sending 3 boxes, she is expected to pay ₦300.

There were also confirmations that some drivers prefer traveling without passengers but with all the seats filled with boxes because they make more profit. The assistants, processing at home were identified to have been responsible for sending of those boxes to the marketer who she might have reached an agreement with.

***Table 4.*** *Cost of Transportation per Trip for Processors Marketing Outside their Processing Area*

| Town | Fare (to and fro) – ₦ |
|---|---|
| Lagos | 2500 |
| Ibadan | 1650 |
| Ife | 1650 |
| Ilesa | 1100 |
| Akure | 600 |
| Ikare | 80 |
| Abuja | 1600 |
| Aiyesegba | 600 |
| Oba | 350 |
| Akungba | 140 |
| Oka | 300 |
| Isua | 400 |
| Owo | 400 |
| Kabba | 500 |
| Ado-Ekiti | 600 |

Source: Field Survey, 2007

## 3.8. Cost of Transportation per Trip for Wholesalers (from the Production Area Market)

Table (5a) shows cost of transportation per trip for wholesalers (from the production area market). The table shows that 57.4% of the respondents spend ₦150 on the transportation of each bag of raw locust bean and another ₦200 on loading and off-loading of the product. According to another 26% of the respondents, transporting a bag of raw locust bean cost ₦200, while 11.1% spend ₦100 on transportation of a bag of locust bean (raw) while loading and off-loading also cost them ₦200 respectively. The differential in prices of transporting these goods could be attributed to distance involved and the type of vehicles used in transporting them.

It was learnt that big Lorries like Benz 911 normally charge less while small vehicles like Casptas charge very high to the extent that buyers try to avoid them. It was also interesting to gather that these buyers (raw locust bean) do not normally pay for their transport fare per head, and this is because the charges on their loads cover their fares.

Looking at table 8 critically, it would be observed that irrespective of the source of the raw product, the price of loading and off-loading remain the same. The opportunity the traders have to choose from various transportation facilities with different prices is of great benefit for cost minimization.

## 3.9. Net Income/Mini Graduating Bowl of Locust Bean from Sales within the Study Area

Table (5b) unfolds the net income per mini graduating bowl of locust bean from selling within the study area. Also 76.3% of the respondents make between ₦191-₦200 from a unit measurement called mini graduating bowl, 11.9% make between ₦180-₦190.

Simply, in considering the price distribution on the table 5b, which shows the net income/ mini graduating bowl of locust bean from selling within the study area, it could be deduced that processors makes good profit from the trade despite marketing locally. This is in line with the findings of Adisa et al, (2014)

## 3.10. Net Income/Mini Graduating Bowl from Sales of Locust Bean outside the Study Area

Table (5c) depicts the net income/ mini graduating bowl from sales of locust bean outside the study area. 27.1% of the respondents realize between ₦241 and ₦250, 25.4% make between ₦251 and ₦260, 11.0% make between ₦261 and ₦270 from the sale of a mini graduating bowl of a mini graduating bowl of processed bean when sold outside the study area.

It is encouraging that majority of the respondents' make good profit from the sale of a mini graduating bowl of processed bean when sold outside the study area.

Those who make between ₦180 and ₦210 despite taking out their products could probably be selling in the neighbouring town like Ikare. Nevertheless, the table still revealed that the profit margin is higher when products are sold outside the processing area.

## 3.11. Illustration of Credit Availability in the Trade

Table (5d) illustrates the credit availability in the trade. 62.8% of the respondents neither buy nor sells on credit and 2.9% did not respond at all on the use or offer of credit facilities.

A few of them buy on credit (22.7%) while few of them sells on credit Responses could not be gotten from very few of them (2.9%). One never can tell whether this category of people sees it as their trade secret.

Considering the category of people that do not normally sell on credit, it was observed that the retailers (processed) fall prominently to this category. This may be because it is believed that retail do not require as much capital as wholesale in business judging from the volume of goods or services rendered by each of these categories.

***Table 5.*** *Transportation cost, Net Income and Credit availability for the trade*

| (a) Cost of transportation per Trip for wholesaler (from the production area market) | | | (b) Net income/ mini graduating bowl of locust bean from sales within the study area | | |
|---|---|---|---|---|---|
| **Quantity/ Price** | **Frequency** | **Percentage** | **Amount** | **Frequency** | **Percentage** |
| Bag (₦150) and loading (₦200) | 31 | 57.4 | No response | 1 | 0.8 |
| Bag (₦200) and loading/ off (₦ 200) | 14 | 26 | 180 – 190 | 13 | 11.0 |
| Bag (₦ 100) and loading/ off(₦ 200) | 6 | 11.1 | 191 – 200 | 90 | 76.3 |
| No response | 3 | 5.6 | 201 – 210 | 14 | 11.9 |
| **(c) Net income/ mini graduating bowl from sales of locust bean outside the study area** | | | **(d) Illustration of credit availability in the trade** | | |
| **Amount (₦)** | **Frequency** | **Percentage** | **Comment** | **Frequency** | **Percentage** |
| No response | 2 | 1.7 | No response | 5 | 2.9 |
| 180 – 190 | 7 | 6.0 | Buy credit – yes | 39 | 22.7 |
| 191 – 200 | 25 | 21.2 | Sell credit – yes | 20 | 11.6 |
| 201 – 210 | 4 | 3.4 | Buy/ sell credit – no | 108 | 62.8 |
| 231 – 240 | 5 | 4.2 | | | |
| 241 – 250 | 32 | 27.1 | | | |
| 251 – 260 | 30 | 25.4 | | | |
| nb261 – 270 | 13 | 11.0 | | | |

Source: Field Survey, 2007

## 3.12. Monthly Income from Locust Bean Trade in the Study Area

Table (6) shows the monthly income from locust bean trade in the study area. It reveals that 36.6% make between ₦21,000 and ₦30, 000 profit from the trade monthly, 33.1% make between N10,000 and ₦20,000, 8.7% make between ₦31,000 and ₦40,000, 8.1% make between ₦41, 000 and ₦50, 000, 4.7% make between ₦51, 000 and ₦60, 000.

The variability in income could be attributed to variation in number of trips to market, volume procured per process for marketing, places of marketing and marketing skills, to mention few. It was also observed that the wholesalers (raw) make more profit than processors (retailers) which negate the economic theory. Respondents making between ₦10, 000 and ₦30, 000 were processors while all the respondents who declared between ₦31, 000 and ₦70, 000 profit per month were wholesalers of raw products.

***Table 6.*** *Monthly Income from Locust Bean Trade in the Study Area*

| Quantity/Price (₦) | Frequency | Percentage | Marketer's Category |
|---|---|---|---|
| No response | 4 | 2.3 | |
| 10,000-20,000 | 57 | 33.1 | Processor (Retailers) |
| 21,000-30,000 | 63 | 36.6 | |
| 31,000-40,000 | 15 | 8.7 | |
| 41,000-50,000 | 14 | 8.1 | |
| 51,000-60,000 | 8 | 4.7 | Non-Processor |
| 61,000-70,000 | 3 | 1.7 | (Wholesalers) |
| Confidential | 8 | 4.7 | |
| Total | 172 | 100 | |

Source: Field Survey, 2007
1US$= ₦138:00 Nigerian currency

Considering the minimum wage being paid to civil servants in Ondo State which is ₦9, 500, it could be concluded that the business is highly profitable since none of the respondents realizes anything less than ₦10, 000 monthly as income.

However, the trade could be referred to as one, which had played a vital role in wiping away poverty in the study area, which in turn had raised the living standard of people in the environment.

## 3.13. Consent of Respondents to Sponsoring their Ward Education

Table (7a) unfolds the consent of respondents to sponsoring their ward education. The table shows 84.3% of the respondents as responsible for their children education, 13.4% were not and 2.3% did not respond to the question. The percentage of singles, childless marriages and some of the respondents having under aged children could be the reasons for the few not responsible for their children education. The higher percentage of those responsible for their children education is a good indicator of the trade viability in the study area.

## 3.14. Category of Schools Attended by Respondents' Wards

Category of schools attended by respondents wards are revealed in Table 7b. It shows that 29.1% of the respondents have children in primary and secondary schools as well as tertiary institutions, 7.0% have their wards only in secondary school.

About 10.5% of the respondents did not respond to this but it could be generally deduced from the view of the majority that the locust bean marketers could afford to sponsor their children at all levels of education. In fact 8.1% of them admitted that they have their wards in tertiary institution. Since majority of the respondents did not school beyond primary and secondary schools but sponsor their wards up to tertiary levels, it implies that there is increase

in value for education with an improvement in household economy in the area.

## 3.15. Reliance on Locust Bean Trade for Sponsoring Ward Education

Table (7c) shows reliance on locust bean trade for sponsoring ward education. 81.4% of the respondents rely on proceeds from locust bean's sales for sponsoring their children in school. Only 3.5% of them engage themselves in other jobs like teaching, farming and handwork to meet this obligation. This is a pointer to the economic viability of the trade which implies that locust bean trade is reliable and can contribute to sustainable development.

## 3.16. Reliance on Locust Bean Trade for Offsetting Household Expenses

Whether the respondents rely on locust bean trade for offsetting household expenses or not are revealed in Table 7d. 89.5% of the respondents are sustaining their household with the income generated from locust bean trade, 9.3% did not respond at all and 1.2% sustains their household using income generated from other petty trading in addition to that generated from locust bean trade. Considering the proportion of respondents who claimed they could manage their house with income generated from locust bean trade alone, it could be remarked that the viability of the trade cannot be over-emphasized.

***Table 7.*** *Respondents' Significant Achievements from the trade*

| **(a) Consent of respondents to sponsoring ward education** | | | **(b) Category of schools attended by respondents wards** | | |
|---|---|---|---|---|---|
| **Response** | **Frequency** | **Percentage** | **School** | **Frequency** | **Percentage** |
| No response | 4 | 2.3 | No response | 18 | 10.5 |
| Yes | 145 | 84.3 | Primary | 38 | 22.1 |
| No | 23 | 13.4 | Secondary | 12 | 7.0 |
| | | | Tertiary | 14 | 8.1 |
| | | | All of the above | 50 | 29.1 |
| | | | Primary/ secondary | 25 | 14.5 |
| | | | Secondary/ tertiary | 15 | 8.7 |
| **(c) Reliance on locust bean trade for sponsoring ward education** | | | **(d) Reliance on locust bean trade for offsetting household expenses** | | |
| **Response** | **Frequency** | **Percentage** | **Response** | **Frequency** | **Percentage** |
| No response | 26 | 15.1 | No response | 16 | 9.3 |
| Yes | 140 | 81.4 | Yes | 154 | 89.5 |
| No | 6 | 3.5 | No | 2 | 1.2 |

Source: Field Survey, 2007

## 3.17. Perceptions of the Trade Profitability if Marketed Outside the Study Area

The study reveal all the processors (respondents) perceived the trade is more profitable when marketing took place outside the production area. But this was disagreed by the non-processors. The reason for this could be due to the high patronage by processors in this area which is unlikely to be found elsewhere even though is possible.

The group of people who were of opinion that it is more profitable to sell outside the production area also claimed that there would be change in price and specifically, increase in price.

## 3.18. Materials Used in Packaging Products for Marketing

Respondents, who sells in wholesales (raw) revealed that they packages their products for marketing with the use of nylon bag, polythene bag, sack, and bagco bag. They also reacted that the use of nylon bag, polythene bag and bagco bag becomes necessary for the purpose of those buying in mini graduating bowls. While the respondents who sell in retails (processed bean) confirmed the use of dry cocoa leaf, dry Banana/plantain leaf as wrapper. The use of immature palm frond and plantain/banana stem peels as the rope for smarting up each local package was confirmed. The quantity of leaf consumed depends on the quantity of goods bought.

There is also need to stress that the balls of processed bean are arranged inside boxes (big or small) in layers and this has been assisting in maintaining the ball shaped formed. The big boxes are used in transporting processed locust bean to far distances while the small boxes are used to transport to near-by towns. The reasons being the carrying capacity of those small boxes may not be economical for long distances. It was gathered that the small box could accommodate 400-450 balls of 23.5g while the big box could accommodate 150-200 balls of 23.5g and 200 balls of 47.og altogether at the same time.

It was also gathered that people taking out processed bean to long distances like Lagos, Abuja, Ibadan, etc. do not normally travel with boxes; rather they package them inside big nylons before they are put inside sack bags which are later formed into balls upon reaching their destination. It was learnt that salt is often used to mix such goods for proper preservation.

Another method of packaging products to sell in far places is that balls are salted and tied in either 5 balls per wrap or 10 balls per wrap with the use of dry cocoa leaf and dry banana/plantain leaf.

### 3.19. Mode of Transportation of Processed Locust Bean

It was gathered that all the processors marketing their product outside the processing area transport their goods by bus, although, small bus was identified to be common in near-by towns.

### 3.20. Other Costs Incurred in the Marketing of Locust Bean

Apart from the cost expended on the procurement of the seeds, there are other costs, incurred on this product for it to be befitting for sale or consumption by the end user. The processors claimed that they spend some money on salt for preservation, firewood for cooking nature, rock salt for softening the seed while boiling and leaf for packaging for sale.

Although, very few of them, confessed that they normally go to forest to fetch their leaves and firewood but yet the cost has to be put into consideration. Certain percentages of respondent who believe in using native rock salt to soften the seeds while boiling also claimed that the cost is being put into consideration in marketing.

Non-processors disclosed that they spend a lot on accommodation while traveling out their local environment to procure the raw product. This becomes necessary when the need arise for them to pass night which is very common to them. Consequently, the processors who sell outside their local environment also claimed that they expend certain amount of money on accommodation. For instance, people who sell at Akure, Owo, and Ado-Ekiti.

### 3.21. General Perception of the Respondents on Market Behaviour

All the respondents admitted that there had been changes in the price of locust bean in the past five years, and claimed that they enjoy higher patronage during the dry season. It was observed that despite increase in price, the reaction got from customers still remain normal. Although, it was also admitted that price fluctuation affects the supply of this products and that most important factors responsible for price fluctuation include, cost of labour used in gathering/pre-processing operations, seasonal nature of the product, cost of transportation, hoarding and above all, local unavailability of this product which necessitate traveling far to procure the bean.

### 3.22. Challenges Associated with Marketing of Locust Bean

The major problems faced by both the processors and non-processors are accommodation problem and prompt transportation. The processors also stressed the local problem of insufficient shed (shelter) in the market square most especially in the odd weather.

The stigmatization being experienced by the processors when traveling to market with boxes by the other passengers was also emphasized and finally, inadequate storage facilities, poor packaging and unavailability of the product in large proportion which then necessitates going as far as northern part of the country to procure seeds were also identified as serious challenges facing the trade.

### 3.23. Test of Hypothesis

Hypothesis stated for this study is:

$H_o$: Socio-economic implications of locust bean trade impact on poverty reduction in the area are not significant.

$H_A$: Socio-economic implications of locust bean trade impact on poverty reduction in the area are significant.

The result revealed that reliability on locust bean trade for sponsoring ward education is significantly dependent on monthly income from locust bean trade in the study area.

$$(X^2 = 52.720^a: df = 14; Pr < 0.001)$$

The test is significant, therefore Ho is rejected. It can be inferred that income generated from marketing of locust bean in the study area could sponsor ward education successfully without generating additional income from other sources. This can be consolidated by considering the data obtained on household sustainability and the result also revealed that reliance on locust bean trade for offsetting household expenses (household sustainability) is significantly dependent on monthly income from locust bean trade in the study area.

$$(X^2 = 31.106^a: df = 14; Pr < 0.005)$$

The test is significant, therefore Ho is rejected. It can be inferred that income generated from marketing of locust bean in the study area could be relied on for offsetting household expenses without generating additional income from any other sources.

In this light, it could be finally inferred that locust bean trade impact poverty reduction in the study area significantly, bearing in mind the impact of education on development. Thus, poverty - a world acclaimed social problem is reduced by locust bean trade.

## 4. Conclusion

The study surmised the socio-economic potentials of *parkia biglobosa* to include creation of employment and generation of income. Majority of the respondents rely on the marketing of the product as their major source of livelihood. The results of this study show that locust bean processing and trading in the study area are predominantly female occupation. It was also confirmed that locust bean marketing in the study area is a very profitable venture which can be used as a tool for poverty reduction.

The processors, who sells in retails and non-processors

who sells in wholesales are spread all over the town and are mainly females (97.7%). The processed product can be bought in small quantities and are preferred in many households. The propagation of locust bean tree is lacking in the study area and the naturally available ones are not so productive.

The most important factors limiting the expansion of locust bean market are inaccessibility to storage facilities and the use of unhygienic packaging materials in selling the product, even though the processors (retailer) in the area sees it as the best without considering market expansion to include export potential.

Other problems considered facing marketing of the products include accommodation, prompt transportation and shelter unavailability in the market for retailers use during odd weather. The findings of this study should serve as springboard for further research into other economic potentials of the product.

## Recommendation

Since the people of Arigidi Akoko have proved beyond reasonable doubt that economic viability of locust bean trade in their area cannot be over-emphasized, there is need for promotion of local propagation of this tree. This is expected to be championed by the government agency concerned in the state (Ministries of Environment and Trade/Commerce). Such a move will reduce stress/cost of traveling far to the North by wholesalers, apart from bringing down the price. It could also lead to job creation in the area.

On packaging, reasonable packaging methods should be introduced adopted, like conversion into powdering form, plastic packaging and freezing to make its fit or suitable for export so as to improve the shelf life of the product and attract foreign exchange earnings.

Government should aid prompt transportation and more shelters built or provided in various market squares as it used to be in the olden days.

In the area of accommodation problem, people should learn to be tolerant and also be their brother's keeper by giving out accommodation at reasonable prices in the various marketing places, bearing it in mind that whatever they do would surely have a boomerang effect on them.

Therefore, if government can look into these areas of concern and make necessary improvement, locust bean trade will be more profitable, more acceptable and more attractive to highly educated people in the country at large.

Conclusively, the use of locust bean trade as a tool for poverty reduction in Nigeria should be highly re-emphasized so that forestry sector's contribution towards achieving Millennium Development Goal's (MDGs) target, come 2015 can be highly noticeable.

## References

[1] Okafor, J.C. (1994): Non-Timber Forest Products, Nigeria. Tropical Forestry Action Programme FORMECU, Fed. Dept. of Forestry, Abuja, Nigeria. 1994; 3-9.

[2] FAO Bulletin on Non-Wood Forest Products (NWFP). (7) *Rome*.2000;1-5

[3] Popoola, L. and S.A. Oluwalana (1998) Marketing of Non-Timber Forest Products in Nigeria. Paper presented at the Colloquium on Biodiversity (Rainforest Ecosystem of Nigeria. Organised by FEPA-UNAAB Linkage Centre for Forest Conservation and Biodiversity.1998; 243

[4] Adegeye, A.J. and J.S. (1985) Dittoh Essentials of Agricultural Economics. Impact Publishers Nig. Ltd. Ibadan.1985; 1-25.

[5] Stella, Y.C. (1993) Market Channel Co-ordination and Economic Development in Agricultural and Food Marketing Reforming Developing Countries Selected Reading (Eds) Abbot JCCT A/C A.B Pub. Series. 1993; 25.

[6] Keay R.W.J. (1989) Trees of Nigeria. Published by Forestry Research Institute of Nigeria (FRIN) in Conjuction with Oxford University Press.1989; 251.

[7] A disa, R. S., Ayansina, S. O. and K. B. Olatinwo (2014) Economic Analysis and Constraints of Traditional Processing of African Locust Bean in Kwara State, Nigeria. Kasetsart Journal. (Soc. Sci) 35 : 124 - 133 (2014)