

## Socioeconomic contribution and marketing of *Parkia Biglobosa* (Jacq Benth) in Saki-West Area of Oyo State, Nigeria

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**Abstract:** The study on the socioeconomic contribution and marketing of locust bean in Saki-west area of Oyo state, specifically described the socioeconomic characteristics of the respondents, reviewed the utilization of plant parts, identified the processing challenges and determined the profitability of locust bean enterprise. A total of 100 respondents were interviewed. Descriptive statistics such as mean, mode, frequency and percentages were used to analyse the demographic relationships that exist in the market. Enterprise budgetary analytical approach was used to estimate cost and return. Gini coefficient was used to analyse the market structure. The result showed that 96% of the respondents were females, 35-45 age category have the highest percentage (33%). The finding revealed that the Islamic religion predominate the study area. Acquisition of the majority's (79%) occupational skill is by inheritance from family lineage. The study revealed, *inter alia*: long cooking time as a major challenge with consequent increased fuelwood consumption and the utilization of the bark of *Parkia biglobosa* for treatment of cradle cap (*seborrhoeic dermatitis*). The study revealed that locust beans has a short viability duration (<1month) and leaf wraps as packaging material is reported by (56%) of the respondents. The study showed the average profitability of all the markets, Sango market with the highest Net Profit (₦2259.82) while Gbawojo market has the lowest Net Profit (₦1135.87). Computation of Gini coefficient (G) helped to reveal the market structure. The result,  $G = 0.31844$  indicates the oligopolistic nature of the market. The study recommends that mass awareness be channelled towards the economic value of locust bean tree, which aims at, guiding against its use for fuelwood, improving of Nigerians' general wellbeing through the consumption of locust beans and desist from intake of immune destroyers while improving the status of locust beans producers in the society.

**Keywords:** Socioeconomics, Marketing, Enterprise budgetary, Market structure, "*Parkia biglobosa*"

### INTRODUCTION

*Parkia biglobosa* commonly known as the African locust bean tree grows in the savannah region of West Africa up to the southern edge of the Sahel zone 13° (Campbell-Platt, 1980) is named after the famous Scottish botanist and surgeon, Mungo Park by Robert Brown and has long been widely recognized as an important indigenous multipurpose fruit tree in many countries of the sub-Saharan Africa. The locust bean tree is native to West Africa and it is also called by different local names in different localities; for instance, it is referred to as "*kinda*" in SerriaLeone, "*kpalugu*" among the inhabitants of Northern Ghana, "*Nere*" in Burkina Faso, "*Igilgba*" in Yoruba land and "*worku*" in Ghana (Odunfa and Adewuyi, 1985; Diawara *et. al.*, 2000). The seeds (karwa- Hausa; Iyere- Yoruba) are traditionally used as food condiment (dawadawa- Hausa; *Iru*- Yoruba; soumbala in Burkina faso, Mali, Cotdevoire and Guinea, Ogiri in the Eastern Nigeria). Dehydrated "tempeli" is an equivalent fermented product in Indonesia (Steinkrans *et. al.*, 1965). The tree is the source of a natural nutritious condiment which features frequently in the traditional diet of both rural and urban dwellers in at least seventeen West African countries including Nigeria. *P. biglobosa* is a deciduous perennial that grows to between 7 and

20 metres high in some cases up to 30 metres. The tree is a fire-resistant halophyte characterized by a thick dark grey-brown bark. The pods of the tree, commonly referred to as locust beans, are pink in the beginning and turn dark brown when fully mature. They are 30-40 centimetres long on average, with some reaching lengths of about 45 centimetres. Each pod can contain up to 30 seeds.

The most important use of African locust bean is found in its seed, which is a grain legume, although it has other food and non - food uses, especially the seeds which serves as a source of useful ingredients for consumption, the locust beans is made up of 39-47% of protein, 11.7-15.4% of carbohydrate (Campbell-platt, 1980). A matured locust bean tree can bear more than a tone of fruits to be harvested. Where the tree is grown, the crushing and fermenting of these seeds constitutes an important economic activity. Various parts of the locust bean tree are used for medicinal purposes. As a standing tree, locust bean may have a positive effect on the yield of other nearby crops. Annual production of seeds in northern Nigeria is estimated at around 200, 000tonnes. While the products of the tree are not common in international trade, they form an important part of local and regional trade in West Africa the seeds are especially prized, and much trade occurs locally

in the Sahel region where they are transferred between borders. Alabi *et al.*, (2005) reported that locust bean is rich in lipid, protein, carbohydrate, soluble sugars and ascorbic acid. The cotyledon is very nutritious, has less fibre and ash contents. The oil content is suitable for consumption since it contains very low acid and iodine contents. The oil has very high saponification value and hence would be useful in the soap industry. It has essential acids and vitamins and serves as a protein supplement in the diet of poor families *Dawadawa* is used in soups, sauces and stews to enhance or impart meatiness. The fruit pulp of the African locust bean is sweet to the taste, which indicates the presence of natural sugars and thus a potential energy source. The attractive yellow colour indicates the presence of phyto-nutrients, possibly carotenoids, which are important precursors of retinol (vitamin A). It has a sour taste which indicates the presence of ascorbic acid (vitamin C), Gernah *et al.*, (2007).

It is a multipurpose tree that provides domestic products and income for many rural people, especially women (Sabiiti *et al.*, 1992). The major income-generating products from *Parkia* are made from the fruits of the tree and include seeds, pulp, and a product made from the fermented seeds, locally called *Soumbala* (Kronborg *et al.*, 2013). *Soumbala* has a high protein content 38.4 g per 100g (Teklehaimanot, 2004), and is a traditional and integrated food product consumed throughout West Africa, often in 80% of all meals (Hall *et al.*, 1997) According to Simonyan (2012) economically, the tree provides income and employment to many household members and particularly women who are more involved in processing and marketing of locust bean products. Trading activities are in raw seeds, fermented food condiment, charcoal and firewood among others provides reasonable income and employment products. Ecologically, African locust bean tree plays a vital role in nutrients recycling and erosion control, the tree acts as buffer against the effect of strong wind or water runoff that usually causes damage to crops and soil products. Being leguminous plant, it fixes Nitrogen in the soil thereby enriching the soil nutrients content.

## METHODOLOGY

**The study area:** Oyo State is an inland State in South Western Nigeria with its capital at Ibadan. It lies within Latitudes 07° 3'N and 09° 12' N and Longitudes 02° 47' and 04° 23' E. It Covers a Land area of 32,249 square Kilometres and Bounded by Kwara State in the North, Osun State in the East, Ogun State in the South and in the West partly by Ogun State' and Benin Republic. Saki west local government area of Oyo state, Nigeria has its headquarters in Saki. It has an area of 300 km<sup>2</sup> and a population of 278,002 at the 2006 census Geographically, it approximately stretches from

latitude 08°30'N to 08°55'N and longitude 02°45'E to 03°35'N. It shares boundary with Kwara state in the north, Saki east local government area in the south and is bounded to the west by the Republic of Benin.(Wikipedia, 2009)

**Sampling Procedure, Sampling Size and Method of Data collection:** A multi-stage sampling procedure was used to select 100 respondents, which involves 3 stages; in the first stage, purposive selections of three localities in Saki-west LGA of Oyo state (Sango, Ogidigbo, and Ajegunle) in which major production and marketing activities occur. In the second stage, selection of five markets where the product marketer were in high concentration were purposively selected in the localities, viz. in Sango area; (i) Sango and (ii) Idimagoro market, in Ajegunle area; (iii) Ajegunle and (iv) Gbawojo market, and in Ogidigbo area; (v) Ogidigbo market. In the third stage, random selection of respondents were done based on the list of available marketer in the market for the day proportionally to the size of respondent in each market viz. in these order 40% i.e. 40 questionnaires for (i) above and 15% i.e. 15 questionnaire for (ii)-(v) markets respectively. This is because Sango is a major market that has a large number of sellers in the study area.

**Method of Data analysis:** Descriptive statistics tools, which include mean, mode, frequency, percentage, to present and describe the demography relationships that exist in the market. Enterprise budgetary analytical approach was used to estimate cost and return in Locust bean processing and marketing so as to be able to know the net profit. Benefit Cost Ratio (BCR) was used to evaluate and confirm the profitability of each respondent of locust bean processors and marketers (Adegeye and Dittoh, 1985). Gini Coefficient was also used to analyse the market structure.

## RESULTS AND DISCUSSION

*Parkia biglobosa* contribute significantly to the socioeconomic livelihood of the people. The study showed (Table 1) that females dominated the enterprise with just very minute (4%) involvement of male. Processing of locust beans is mainly done locally by women (Adewumi and Olalusi, 1995). The abstinence of men in this occupation could be as a result of social ego or rather the social discrimination due to the smell; this situation may be a result of the product's odour and product quality due to the poor manufacturing practice (Farayola *et al.*, 2012). Majority (79%) inherited the profession while 21% acquired their skill by training. This means that no formal skill is required for the processing, the skill is usually passed down the lineage. Ethnic diversity of processors revealed that (71%) of them are Yorubas while traces of Igbo (2%) and Hausa (27%) were also revealed.

The processors majorly being Yoruba could be as a result of Saki-west being core of Oyo State, a seat of Yoruba speaking state while 27% of Hausas in

the area could be to the fact that Saki-west, Oyo is closer to the North parts of Nigeria and Igbos were farther from the study area.

**Table1:Socioeconomic characteristics of respondents**

Variables	Frequency	Percentage	Mode
<b>Sex</b>			
Male	4	4	
Female	96	96	Female
<b>Age (Years)</b>			
18-25	11	11	
26-34	31	31	
35-45	33	33	35-45
46-55	19	19	
>55	6	6	
<b>Marital status</b>			
Married	83	83	Married
Single	9	9	
Divorced	8	8	
<b>Family size</b>			
2-4	18	18	
5-7	45	45	5-7
8-10	30	30	
>10	7	7	
<b>Ethnic group</b>			
Yoruba	71	71	Yoruba
Igbo	2	2	
Hausa	27	27	
<b>Religion</b>			
Christianity	15	15	
Islamic	72	72	Islamic
Traditional	13	13	
<b>Level of education</b>			
Primary	72	72	Primary
Secondary	21	21	
No formal education	7	7	
<b>Mode of acquisition of occupation</b>			
Inheritance	79	79	Inheritance
Apprenticeship	21	21	
<b>Those involved in other occupation</b>			
Yes	17	17	
No	83	83	No
<b>Source of capital</b>			
Personal savings	84	84	Personal savings
Bank Loan	13	13	
Cooperative	3	3	

Field Survey Data, 2015

In Table 2, Most (96%) of the respondents do not cultivate, the 4% that said they cultivated *Parkia biglobosa*, said its establishment only occurred years ago by error and that they had tried to further cultivate but prove abortive. The respondents said that it is not that they do not want to cultivate the plant but they have problem with how to break the seed's dormancy because it is encased in a tough, elastic and relatively thick coat that has a very low permeability to any solvent (Simonyan, 2012). The most pressing challenge

encountered in the processing of locust beans according to majority (44%) is the long cooking time, which results in consumption of large volume of fuel. De-hulling and cooking of the locust bean seeds are time consuming, laborious and inefficient(Akande *et al.*2010). Other challenges include problem with storage of market demand excesses, technological improvement as a result of problem arising due to social discrimination due to bad odour and sources of raw material.

**Table 2: Production and challenges**

Variables	Frequency	%	Mode
<b>Do you cultivate</b>			
Yes	4	4	
No	96	96	No
<b>Source of raw material</b>			
Farm	74	74	
Free Area	26	26	
<b>Do you store</b>			
Yes	65	65	Yes
No	35	35	
<b>Storage method</b>			
Sun drying	4	4	
Sack	61	61	Sack
<b>Viability of unprocessed beans</b>			
< ½ Years	11	11	
½ -1 Year	80	80	½-1 Year
2-4 Years	9	9	
<b>Production challenges</b>			
Locust beans Cost Price	22	22	
Fuel Wood Consumption	44	44	Fuelwood consumption
Electricity and water	17	17	
Labour Intensiveness	17	17	
<b>Suggested solutions</b>			
Establishment of Plantation	4	4	
Technological improvement	57	57	
Stable power and borehole	9	9	

Field Survey Data, 2015

Table 3 revealed that the bark of *Parkia biglobosa* is used by majority (66%) of the locust beans producers for treatment of cradle cap called *eela* by the Yorubas, 34% use it for treatment of scabies. Cradle cap (*seborrhoeic dermatitis*) is a yellowish, patchy, greasy, scaly and crusty skin rash that occurs on the scalp of newly born babies. It is usually not itchy and does not bother the baby.

The leaves are used for the treatment of malaria (45%) and also for the control of flea (55%) called “*yooro*” by the Yorubas. This support the view of Audu *et al.*, (2004) that it is used for a wide range of ailments such as malaria, diarrhoea; jaundice. The seed is used by majority (55%) for regulation of blood pressure, for treatment of pile, serves as a substitute for maggi, and improves vision.

**Table 3: Valuation and utilisation of *Parkia biglobosa* plant parts**

Variables	Frequency	Percentage	Mode
Is the plant valuable?			
Yes	93	93	Yes
No	7	7	
Bark Usage			
Scabies	34	34	
Cradle-cap (eela)	66	66	Cradle-cap (eela)
Leaves Usage			
Malaria	45	45	
Control of flea (Yooro)	55	55	Control of flea (Yooro)
Root Usage			
Stomach	45	45	Stomach
None Usage	55	55	
Seed Usage			
Regulation of HBP	54	54	Regulation of HBP
Pile treatment	9	9	
Substitute for Maggi	21	21	
For good eyes sight	16	16	

Field Survey Data, 2015

In Table 4, Locust beans enterprise in the study area could be termed profitable with Benefit Cost Ratio (BCR) of 1.22, 1.17, 1.13, 1.1, and 1.21 for Sango, Idimangoro, Ajegunle, Gbawojo and Ogidigbo markets respectively. Investment criteria require that BCR should be greater than [BCR > 1] before a business can be termed profitable

(Adegeye and Dittoh, 1985). Rate of Return on Investment (RORI) of 21.65, 17.4, 13.0, 10.22 and 21.3 for Sango, Idimangoro, Ajegunle, Gbawojo and Ogidigbo markets respectively also shows that the business is lucrative in the study area.

**Table 4: Average Profitability of Sellers in the Five (5) Markets**

Market	TFC (₦)	TVC (₦)	TC (₦)	TR (₦)	Profit (₦)	ROR (%)	RORI (%)	BCR	P.I
Sango	6035.32	4404.86	10440.18	12700	2259.82	121.60	21.65	1.22	0.18
Idimangoro	6489.99	4512.48	11002.47	12916.67	1914.2	117.40	17.40	1.17	0.15
Ajegunle	6640.72	4546.04	11186.76	12650	1463.24	113.10	13.00	1.13	0.12
Gbawojo	6618.44	4495.69	11114.13	12250	1135.87	110.20	10.22	1.1	0.09
Ogidigbo	6239.15	4077.01	10316.16	12516.67	2200.51	121.30	21.30	1.21	0.18

Field Survey Data, 2015 Keys: TFC- Total Fixed Cost, TVC- Total Variable Cost, TC –Total Cost, TR- Total Revenue, ROR- Rate of Return, RORI- Rate of Return on Investment, BCR- Benefit Cost Ratio

In Table 5, Gini coefficient (G) of 0.31844 was obtained in this study, which indicates the inequality in sales revenue of respondents and hence high level of concentration. This is a reflection of inefficiency in the market structure for locust beans processors in the study area. This implies that profit is not evenly distributed among

the marketers and producers of *Parkia biglobosa*. With Lorenz curve showing the inequality along the 45° line of perfect equality of income (Figure 1), Gini coefficient thus indicating locust bean market as oligopolistic in structure. This results implies that a small numbers of sellers exert control of the sales of *Parkia biglobosa*.

**Table 5: Computation of Gini Coefficient Showing the Market Structure**

N	Freq. of sellers	% of sellers (X)	Cumm. % of sellers	Total sales (₦)	% of Total sales	Cumm.% of Total sales (Y)	(XY)
7000-9000	16	16	16	130000	10.29	10.29	0.01646
9001-11000	8	8	24	82000	6.49	16.78	0.01342
11001-13000	16	16	40	196000	15.52	32.3	0.05168
13001-15000	60	60	100	855000	67.7	100	0.6
<b>Total</b>				<b>1263000</b>			<b>0.68156</b>

G=0.31844 Field Survey Data, 2015

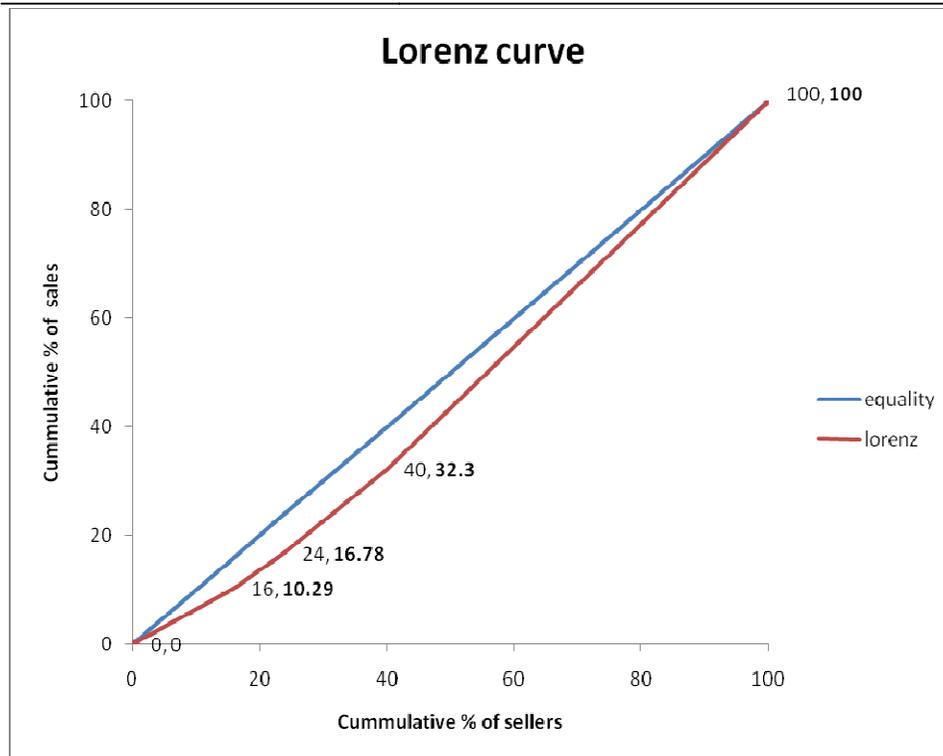


Fig 1: Lorenz curve showing the distribution of the sellers against the size sales of locust beans processors in Saki-west area of Oyo state

#### CONCLUSION AND RECOMMENDATION

Following the result of this study, it can be concluded that locust beans enterprise is worthwhile. The processors see the profit made from sales as being sustainable to meet their basic needs, though investment in the enterprise is low, owing to the fact that the capital source is from profit made from previous sales, which barely could sustain them. In addition, it could be concluded that with increase in capital the quantity of locust beans will increase with a consequent increase in the profit made. It was recommended that marketing of *Parkia biglobosa* should be encouraged through provision of soft loans by the government to the producers and marketers to enhance easy large scale production. Plantation of *Parkia biglobosa* should also be established by government and individuals to prevent extinction. Awareness about the nutritive and medicinal value of *Parkia biglobosa* should be publicised to boost the health condition of the populace.

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