



Evaluation of Profitability of African Oil Bean (*Pentaclethra macrophylla* Benth) Marketing and Distribution in Ibadan Markets

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ARTICLE INFO

Article history:

Received: 22 February 2015;

Received in revised form:

15 March 2015;

Accepted: 10 April 2015;

Keywords

NTFPs,
Marketing,
Profitability,
Ibadan.

ABSTRACT

African oil bean (*Pentaclethra macrophylla* Benth) is one of the numerous tree plants in the tropics found abundantly in the Eastern part of Nigeria where the seed called ugba – a non timber forests product is not only consumed as a delicacy but highly revered and recognized as one of the cultural menu recipes for traditional ceremonies. The study was all about the profitability of marketing the seed within Ibadan metropolis, Oyo State, Nigeria. Purposive sampling technique was employed using structured questionnaires to interview the traders. The result revealed among many others that the business was female gender – driven, dominated by Igbo traders (78.12%) and quite profitable. The average profit per 98.6kg bag was ₦23675. Profitability (₦0.29) tells that for every one Naira investment, 29kobo is realized as profit and the profitability ratio (0.22) with regard to sales reveal also that for every one Naira sales or returns 22kobo comes in as net income. Notwithstanding the profit margin, the business was however not without some constraints against which some recommendations were made.

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Introduction

Among numerous economic trees of the tropical African forest ecology, is the *Pentaclethra macrophylla* (African oil bean). It is very much unique in the sense that it is still in the shadow of many other tropical tree crops of comparable girth and dominance with regard to ecological and geographical spread in Nigeria notwithstanding its vast potential uses much untapped.

It is the sole member of the genus occurring naturally in the humid lowlands of West Africa (Aju and Okwulehie, 2005). It is found abundantly in the South eastern part of Nigeria where its economic value and uses are not only acknowledged but appreciated. It also thrives to a good extent in the South-south geopolitical zone of the country and skeletal presence in the South western part and middle belt of Nigeria.

Although, it is a natural hard wood, its most potential usefulness abounds in the edible seed processed into a cuisine called Ugba among the Igbo speaking tribe of Nigeria. Due to the hard nature of the wood and the highly branched stem which limits its use versatility, it is much favored in the African setting for the production of domestic utensils like pestle and mortar, furniture items among others.

Pentaclethra macrophylla is a multi-purpose tree from Africa with potential for agro-forestry in the tropics (Ladipo, 1984). "It is a leguminous tree of the family leguminosae and sub-family mimosoideae which is very much recognized by peasant farmers in the South east of Nigeria for its soil improvement properties (Akindahunsi, 2004).

Historically, Ladipo and Boland (1995), said it has been cultivated in Nigeria since 1937. "The trees grow to about 21 m in height and about 6m in girth, flowering around March – April, June and November" (Keay et al., 1989). The tree is dark reddish-brown in colour. It produces sweet-smelling, yellowish or pinkish-white flower which attracts Honey bee often. The seeds are produced from brown and woody pods when mature

through explosive mechanism which disperses flat glossy brown seeds that curls up. On some occasions, the farmer harvest the seed at maturity just before the pod turns dark-brown (dries up) to avert or reduce loss of seeds through explosion.

P. macrophylla seed (ugba) is one of the non-timber forest products in Nigeria forest ecology with limited recognition considering the skewed agro-ecological spread and knowledge of the potential uses and benefits. It is well exploited in the South-eastern part of Nigeria as food and cash crop. "The trees are often planted along the sides of the roads as shade trees and around communities as cash crops" (Ajugwo, 2013). In fact, Amaechi et al., (2014) reflected on unverified history which had it that it was initially introduced into the Eastern part of Nigeria for the purpose of landscaping and mapping.

It has varying local names among some of the major Nigeria tribes: - Igbo – akpaka or ugba; Edo – okpaha; Yoruba – apara etc.

Common ethno-botanical uses/nutritional values cuts across medicine, recreation, aesthetics/fashion purposes, food and food condiments, religious/social considerations mostly in the South-eastern states of Nigeria. Enujiugha and Agbede (2000); Asoegwu et al., (2006) stated that the common uses of *P. macrophylla* include food, salt substitute, edible oil seed, seed craft, dye, fencing and palings, charcoal, carving bowls, medicine (convulsion, itching, lactogenicity, wound, diarrhea), seed wood and ornamentals. The seed is a source of oil used for the production of candle and soaps while the seed shells can be transformed into beads. "The pharmacological importance derivable from its seeds, roots, barks and leaves are of benefit in the treatment and management of obesity, itching, heart problem and high blood pressure (Ugbogu and Akukwe, 2009). In a typical Igbo land, ugba is seen as next to kola nut in terms of importance and recognition in any traditional festival/occasion. The fermented product ugba (old Imo State) or ukpaka (old Anambra State) is eaten alone or with other ingredients like

stockfish, garden egg, sliced tapioca or can be mixed with vegetable popularly known as African salad in the Eastern part of Nigeria (Achinewhu, 1986; Mbajunwa et al. 1998).

Unlike most forest/agricultural products, seasonality and perish ability (though it exist), have never been of great challenge to its availability but problem of lack of persons to roam the forest to collect the dispersed seeds. Ugba is available all the year round, though with limitation in supply during high festival period of the year like December which could well be attributed to demand pull. Population pressures as well as urbanization have not spared this important eco-friendly cash crop despite the numerous potential benefits. Unfortunately, while it is diminishing just like most other tree plants, adequate replacement is not forthcoming.

In view of the above highlighted benefits and several others yet to be identified, one stand to wonder why there is virtually no popularity and acceptance of this Non-Timber Forest Product (NTFP) plant in the South-western part of Nigeria (Ibadan precisely) considering the agro-ecological/climatic relativity of the area with the South-east.

Many studies have no doubt being carried out in diverse areas on this plant yet, not known holistic research has been done to reveal the profitability of marketing *Pentaclethra macrophylla* within Ibadan metropolis despite the enormous population of the Igbo extraction in the environs. This study therefore, attempt to fill up the information gap in order to enhance knowledge flow in the area of environmental protection and sustainability – the knowledge of the usefulness of a resource (plant) can go a long way in reducing the extent of intent to destroy it for lesser worthy alternatives. “There is little reason to expect natural resource development if people are indifferent to the products or services which such resource can contribute” (Jhingan, 1997). Natural resources, most often, are unutilized, underutilized or mis-utilised in low income areas.

The research questions therefore bothers on the following: What are the socio-economic factors of the people involved in *P. macrophylla* marketing in Ibadan? What are the sources and distribution channels of the product? Is it a profitable venture? Are there limitations to the trade?

The general objective is to investigate the marketing profitability of *Pentaclethra macrophylla* within Ibadan metropolis given considerations to the following specific **Objectives**

- i) identify the various distribution channels
- ii) examine the militating factors in the marketing activities
- iii) Evaluate and analyze the sales profitability.

This study is germane to understanding and demystifying the age-long ignorance-driven concept surrounding the use and marketing of *P. macrophylla* within the South-west of Nigeria (Ibadan in particular). To this is the fact that the knowledge of the profitable nature of the business would enhance the influx of many hitherto idle hands to benefit economic-wise by engaging in the business. Also, exploration into more benefits of the plant would lead to interesting desire to preserve the plant and possibly plant more thereby enhancing the effectiveness of forestation campaign programme. Collectively, there will be an improved environment health-wise and general well-being while enabling accelerated speed towards attaining the millennium development goal – Eradication of extreme poverty.

Methodology of the study

The study area is Ibadan, the capital of Oyo State, Nigeria. The choice of Ibadan was borne out of the a priori knowledge that Ibadan is the largest city in West Africa and one of the cosmopolitan cities with very high population in Nigeria,

thereby indicating a very large market to exploit with regard to economic activities. It is approximately on longitude $3^{\circ} 51'$ East of the Greenwich Meridian and latitude $7^{\circ} 23'$ north of the equator with a distance of about 128km north east of Lagos. Ibadan is made up of 11 local government areas among which five are urban and six semi-urban. It has a total land area of 3,000km² and a population of 1,338,659 (NPC, 2006). The city, though predominantly populated by Yoruba, has several other tribes like Hausa, Igbo, Edo etc and foreigners. While the semi-urban or rural area dwellers are predominantly farmers, the urban dwellers are civil servants, traders, artisans etc.

The study focused on the traders involved in *P. macrophylla* as sole merchandise or in combination with other products within Ibadan selected markets. Two-stage purposive sampling technique was used for the selection of five markets and for the capture of all available traders of *P. macrophylla*. The five selected markets were purposively chosen based on pre-survey knowledge of markets involved in *P. macrophylla* marketing and the second purposive sampling was carried out through interview of all known marketer of African oil bean in Ibadan in view of the small population of traders involved in the trade. Of the 35 respondents served with structured questionnaires, 32 were finally used for the analysis as a result of 3 being found unworthy after collation due to inconsistencies/faulty responses.

The primary data for the analysis was got through interviews of the respondents in the chosen markets. Analysis of data was done using descriptive statistics like tables, pie chart and histogram to summarize the respondents' socio-economic characteristics and channels of distribution while budgetary technique and Return on Investment (ROI) measure were used to determine the profitability using the gross margin, the total costs and net income.

The formula used for the budgetary analysis of profit and profitability ratios was modeled as follows:

Revenue/Cost specification:

$$\text{Total Revenue (TR)} = \text{Total Sales (N)} - \text{Total Cost (TC)} = \text{Total Fixed Cost (TFC)} + \text{Total Variable Cost (TVC)} \quad (\text{i})$$

$$\text{Total Variable Cost (TVC)} = \text{Total cost of products sold} + \text{Transport cost (when involved).} \quad (\text{ii})$$

$$\text{Gross Margin} = \text{GM} = \text{TR} - \text{TVC} \quad (\text{iii})$$

$$\text{NI or NR} = \text{TR} - \text{GM} \quad (\text{iii})$$

where NI is net income and NR is net revenue.

$$\text{Return on Sales} = \text{NI/TR} \quad (\text{iv})$$

$$\text{Return on Investment (ROI)} = \frac{\text{Net Income}}{\text{Total Cost}} \times \frac{100}{1} \quad (\text{v})$$

Results and Discussions

The cross-sectional data above revealed that female gender represents overwhelming majority of the traders (81.25%). The dominance of female gender in this study agrees with Munonye (2010), whose study on African oil bean marketing in Owerri area revealed that the trade was dominated by women (90.44%). It is female gender-driven, with modal age of 51 – 60. Most of the traders are Igbo tribe, married and practice Christian religion. Many of the traders have large family size with majority (78.13%) in the range of 4 – 9. Level of education among the respondents is in the lower rung of education ladder as majority of the traders possess primary school leaving certificate (37.50 %) and secondary school level (31.25%). Virtually every marketer interviewed is primarily occupied with ugba and some other complimentary goods. Only two of the traders engage in the business occasionally, mostly during off-season in their primary occupation (farming).

Table 1. Socio-economic characteristics distribution of respondents

Variable	Frequency	Percentage (%)
Gender		
Male	06	18.75
Female	26	81.25
Age (yrs)		
≤ 20	00	00
21-30	00	00
31-40	05	15.63
41-50	08	25
51-60	12	37.50
61-70	06	18.75
> 70	01	03.12
Marital Status		
Single	02	06.25
Married	22	68.75
Separated	03	09.38
Widowed	03	15.62
Religion		
Islam	02	06.25
Christianity	28	87.50
Traditional	02	06.25
Tribes		
Yoruba	02	06.25
Igbo	25	78.12
Efik	02	06.25
Edo/Isaan	03	09.38
Household size		
1-3	06	18.75
4-6	14	43.75
7-9	11	34.38
> 9	01	03.12
Educational qualification		
None	04	12.50
Primary	12	37.50
Secondary	10	31.25
Tertiary	04	12.50
Others (Trade Test)	02	06.25
Primary occupation		
Sole trading of oil bean seed (ugba)	04	12.50
Trading in oil bean and food items	10	31.25
Trading in ugba and local vegetables	06	18.75
Trading in ugba and palm oil	08	25.00
Ugba and local herbal items marketing	02	06.25
Farming	02	06.25

Source: field survey 2014.

The few Yoruba persons (6.25%) in the trade are old women who have the oil bean seeds included in their herbal wares. The marketing distribution route involves different categories of players rendering various marketing services. It sometimes starts with itinerant wholesalers (merchants) who travel out of the town to as far as Ogun State, Edo State, Ondo State and South-eastern States of Nigeria to buy the product and then transfer the goods to the sedentary wholesalers and finally to the retailer. It is semi-complex as retailing is carried out sometimes at every stage of the channel.

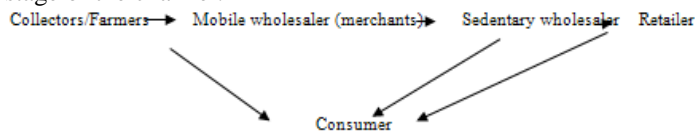


Figure 1. Oil bean seed distribution pathway in Ibadan metropolis

Source: Market survey, 2014



Figure 2. Pie chart showing Product source distribution of respondents

Source: Field survey 2014

The chart above clearly shows that majority of the traders (44%) source their wares from markets other than their sedentary posts. Though, quite a sizeable number (31%) of the traders do travel far away from Oyo State in search of the products, Ojo market stand out as the wholesale and retail depot for other markets in Ibadan. It is no surprise considering the fact that the market serves as the rallying point for many traders from far and near (even from the Eastern part of the country) on the intermittent market days. Some of the marketers that are retail traders of *Pentaclethra macrophylla* (25%) source the wares from their domiciled market.

Costs/Return analysis estimate per month

Quantitative measurement in kilogram weight was employed to capture the sales and purchases. Common unit for sales is the kongo which is about 1.35kg and units for purchases are the 4litre paint container, 50kg bag and 100kg bag. There are between 27 and 30 4litre-paint container in a full 100kg bag and between 13 and 15 in a 50kg bag.

In the above regard

Four-litre paint container of oil bean seed = 3.7kg = 2.5kongo 50kg bag is approximately 35kongo while 100kg bag is about 70kongo.

Sales (₦) = P Q Where P represent product unit price and Q = quantity sold

Total Variable Cost = Cost of goods sold + Transport cost (when involved) + Sac cost.

Fixed cost (₦): - Stall/Space rent, Local government tax and Association due. In a situation where there are other items inclusively traded by the respondents, the fixed cost is spread evenly among the items involved to derive the proportion of the cost equitable to the oil bean seed.

Table 2. Average Sales, Cost and Revenue (₦) distribution with kongo as a unit for sales

Item	Unit Sold	Price/ Unit (₦)	TR (₦)
Sales	73.5	1,450	106575
	Qty	Cost/Unit	TVC (₦) TFC (₦) TC (₦)
Costs	29.4	2750	80850 2050 82900

(Unit of purchase is 4- litre paint).

Gross Margin (GM) = ₦106575 - ₦80850 = ₦25729

Net Income (NI) = ₦106575 - ₦82900 = ₦23675

Profitability

Return on Investment (ROI) = ₦23675/₦82900 × 100 = 0.285 or 29%

Return on Sales = ₦23675/₦106575 = 0.22 or 22%

The result above clearly shows that oil bean marketing is profitable with net income of ₦23675 monthly from about 100kg bag of the product. It is also evident that for every one naira return to the trader, the trader grows the net profit by 22kobo. This implies that the business is effectively run on profitable margin capable of offsetting every marketing cost. As would be expected, the fixed cost (₦2050) of the business is quite negligible thereby affirming as usual one of the known attributes of non- timber forest products marketing-low fixed costs of operation more so, in this circumstance of low perish ability of the goods. Profitability with regard to investment (cost) reveals that for every one naira committed into the business about 29kobo (29%) is realized as a profit. These figures go a long way in establishing the age long knowledge that most non-timber forests products marketing are highly profitable.

Table 3. Harmonized distribution of respondents by constraints (multiple responses)

Constraints	Freq	Percentage (%)
Partial effect of seasonality reduces supply	16	23.19
Goods becoming scarce due to increase in demand	12	17.40
Lack of enough knowledge of the usefulness	09	13.04
Hike in transport fare and problem of bad roads	18	26.09
The trees are continuously cut and removed	14	20.28

Source: Field survey, 2014

The table above highlights the five major constraints confronting the traders in their daily routine. Most commonly talked about is the problem of bad roads to their destinations when they travel out of Ibadan in search of the product. Most road networks to the interior areas where the markets for it are located are bad and this often bring about unprecedented hike in transport fare. Scarcity of ugba becomes rife during the Christmas and New Year period due to high demand for it in the Eastern part of Nigeria where it is highly produced and consumed thereby leaving out little for sale. Also, the traders (13.04%) alleged that there is no enough knowledge with regard to the importance of the plant to most Yoruba and for this most of them do not attach any value to it and hence, no need to patronize them. Seasonality, though not quite serious but plays a role in the scarcity of the good. It is not quite a big problem because of the crop low perish ability if stored under good ventilation unlike many other crops. Of note among these highlighted constraints is the problem of tree felling for numerous other challenging needs for land.

Conclusion/Recommendation

The need to unravel some disturbing fundamental issues surrounding some natural resources (eco-friendly plants) exploitation in our economic environments cannot be over emphasized. To this end, this study is able to establish among several others that oil bean marketing is profitable and female-gender driven in Ibadan. It is also observed to be of great preserve of the Igbo as the tribe dominates the trade. This cannot be unexpected in view of the high level of acceptance and consumption among the people.

Profitability of the business notwithstanding, the day-to-day doing is however constrained by numerous factors among which are: knowledge deficiency as regards the uses and benefits of the plant among the Yoruba tribe; the virtually common problem of deforestation ravaging most of our forests is equally taking its toll on the plant and the environment just like most other tree plants growing in the wild.

Outside the fact that the act of indiscriminate cutting of the trees reduces food supply and economic empowerment, it enhances many an environmental problem among which is climate change that is globally ravaging the earthly ecosystem. Based on the above restrictions among others, it is highly recommended that the various governments of the day (Federal, State and Local) should give high priority to rehabilitation of the road networks as this would go a long way in good maintenance of the vehicles plowing the areas and this will ultimately reduce transportation fare outside bringing about ease of transportation. There is also the need for massive orientation and knowledge enhancement of the populace by various agencies of environmental concern and health/nutrition with regard to uses and values of many non-timber forests products cutting across different tribes and cultures. Above all, more enforcement should be implemented towards reducing or stopping the

preponderance of the art of tree felling with harsher and stern rule against offenders. The slogan ‘cut one tree if so necessary and plant two more’ must be enforced.

It is also not out of order to recommend that more research work should be focused on use diversification of the plant and industrial potentials as raw materials.

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