Original Research Article

Marketing and Utilization of *Irvingia* Kernels 'ogbono' In Ado-Ekiti Metropolitan Area of Ekiti State, Nigeria

ABSTRACT

The study was carried out to determine the marketing channel, utilization and the marketing efficiency of *Irvingia gabonensis* and *Irvingia wombolu* kernels 'ogbono' in Ado-Ekiti Metropolitan Area of Ekiti State, Nigeria. Data for marketing were collected from the whole population (61) of 'ogbono' sellers from two major markets while for the utilization of 'ogbono' 300 households were haphazardly sampled in the study area. Data were collected through the administration of semi-structured questionnaire and interview. The data collected were analyzed using Descriptive statistics; Percentage mention was used for ranking while Gross Margin Ratio (GMR) was used to estimate the marketing efficiency of 'ogbono'. Marketing channel for 'ogbono' revealed seven stages from the producer to the final consumer while the categories of 'ogbono' traders were village merchants, middlemen, wholesalers and retailers. The utilization of 'ogbono' as soup condiment ranked highest with 91.7% while its utilization in treating burns and as anti-venom in treating snake bites ranked 2nd and 3rd with 18.3% and 13.3% respectively. The estimated GMR that was used to determine the marketing efficiency of 'ogbono' in Ado-Ekiti was 26.4%. The GMR showed that there were impediments to the marketing efficiency of 'ogbono' since it was slightly higher than the prevailing bank interest rate of 24%. The major problems militating 'ogbono' marketing was non- availability of 'ogbono' which ranked first with 90.2%, followed by transportation problem with 86.9%, fund ranked third with 83.6% while storage ranked the least with 11.5%. There is the urgent need to

encourage farmers to pursue vigorously the planting of *Irvingia gabonensis* and *Irvingia wombolu;* while government should ensure good road between farm-settlements and main markets so as to facilitate the transportation of 'ogbono' by the processors. This will go a long way in reducing the number of middlemen while improve the marketing efficiency.

Keywords: *Marketing channel; utilization; marketing efficiency, Irvingia kernels*

INTRODUCTION

Irvingia gabonensis and *Irvingia wombolu* commonly known as African mango, bush mango or wild mango is an important Non-Timber Forest Products (NTFPs) that its marketing has been a valuable source of income to the rural people and the urban poor in Nigeria. It belongs to the family *Irvingia*ceae. Harris [1], listed seven species of the *Irvingia* genus; six of which are native to tropical Africa and one species native to South-east Asia. Of the six species native to tropical Africa only two are economically important: *Irvingia gabonensis* var. *gabonensis*, and *Irvingia gabonensis* var. *excelsa* which was renamed to be *Irvingia wombolu.* The two are very similar with the exception that *Irvingia gabonensis* has a sweet edible pulp with less slimy kernel while *Irvingia wombolu* has a bitter inedible pulp with slimier kernel [2, 3]. In Nigeria, both the pulp and dry kernel of *Irvingia gabonensis* are traded while only the dry kernel of *Irvingia wombolu* are traded.

Irvingia wombolu kernel commands more price and demand due to the high slimy consistency produced in soup making when compared with *Irvingia gabonensis* kernels. However *Irvingia gabonensis* kernels are often mixed with those of *Irvingia wombolu* due to the abundance of *Irvingia gabonensis*, but since they are less desirable than *Irvingia wombolu* kernels they reduce

the overall value [4]. The importance of separating the two species to maintain high market prices for *Irvingia wombolu* due to its high slimy consistency had been emphasized [4].

The mixed dry kernels of *Irvingia* have various local names in Nigeria. They are 'ogbono'in Ibo, "Uyo" in Efik and "apon" in Yoruba [5]. In Southern Nigeria, the 'ogbono' are usually ground into a paste or cake used for soup making and as a source of stew thickener [6, 7]. The kernels of *Irvingia gabonensis* and *Irvingia wombolu* also contain oil and fat which are extracted and both the fat and the residue are used. Joseph [8] listed the potential industrial applications of *Irvingia* kernel oil/fat to include cooking oil, margarine, perfume, soap and pharmaceuticals. After the extraction of fat from the kernels there are no wasteful by-products from the fat extraction process as the residue still possesses the consistency and thickening properties required for soup-making.

Furthermore *Irvingia* kernels made into cake called 'dikanut' has been studied and used as a dietary fibre for reducing the hyperglycemic effects and lipid metabolism disruption caused by diabetes mellitus. Adamson *et al.,* [9] found that giving diabetic patients a dose of dikanut preparation daily for 4 weeks reduced blood glucose levels to normal and additionally increased the activity of three ATPases that usually fall significantly below regular levels in diabetics. These dietary fibres work by delaying gastric emptying and thus reducing the intestinal sugar absorption rate. This reduced rate improves the sensitivity of the tissues to insulin, resulting in increased glucose uptake. Thus blood glucose and lipid levels of type II diabetic patients could be improved by a dose of 4g of 'dikanut' per 100g of food [9].

An extensive trade of 'ogbono' between the southern forest areas where they are produced to the non-producing areas in northern areas of Nigeria has been reported [10]. The demand for 'ogbono' in Southern Nigeria alone is around 80,000 tonnes per year, while its export to other

continents is not known [11]. The international trade in *Irvingia* kernels has however, resulted in even higher profit margins for traders in major producer countries such as Cameroon and Côte d'Ivoire [12]. According to Ayuk *et al.,*[13] in West Africa the main exporters are Cameroon and Côte d'Ivoire, trading to Gabon, Nigeria, Liberia and Sierra Leone.

Over the past two decades, there has been scarcity of *Irvingia* species as production fails to keep up with increasing demand in Southwest Nigeria [6]. Babalola and Agbeja [14] also reported the reduction in the quantity of *Irvingia* species in Southwest Nigeria for the past five years. Preliminary survey carried out on this study further confirms the scarcity of *Irvingia* kernels (ogbono) in the study area as traders claimed to travel far in sourcing for the kernel while 'ogbono' is also imported from Cameroon. Since 'ogbono' is a delicacy that is widely source for in the study area, its scarcity as production fails to keep up with increasing demand would have a significant negative effects on its marketing. This scarcity would eventually lead to higher selling price while the 'ogbono' may not meet the needs of the people in the form required due to the poor quality of the kernel from far distance. On the long-run, the short fall in the marketing of 'ogbono' would have negative implication on the socio-economic development of the country.

The scarcity of 'ogbono' in Southwestern Nigeria justifies the need to find out the impediments to their marketing and utilization. This is because it is only through marketing that production and consumption, which are far apart, are linked together. An efficient marketing system ensures equity and efficient allocation of scarce resources to meet the needs of the people in the form, place and time they are required [15, 16]. This study therefore find it necessary to determine the marketing channel and utilization of 'ogbono' while estimating its marketing efficiency in the study area. Understanding the impediments to the marketing and utilization of 'ogbono' will help in developing suitable policies that would put an end to inefficient marketing; especially in

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a dynamic society like Nigeria where the needs, wants and demands of people are diverse and are constantly changing. Providing information on indigenous marketing systems of NTFPs and the various benefits of the marketing process are fundamental to the development of political and economic strategies that will aid the sustainable management of the resources [17].

2. METHODOLOGY

2.1 Study Area

This study was carried out in Ado-Ekiti, Ekiti State, Nigeria. Ado-Ekiti is the State capital of Ekiti State. It is situated in the rain forest zone of the South Western part of the country on latitude 7° and 37' North of the equator and longitude 3°and 15' East of Greenwich Meridian. It has a total land mass of about 884 km^2 and a population of 446,749 [18]. The city enjoys tropical climate with two distinct seasons: these are the rainy season (March to October) and the dry season (November to April). The average temperature ranges between 21^{0}C-28^{0}C with average relative humidity that ranged from 60% - 85%. Ado-Ekiti is landlocked, having no coastal boundary.

2.2 Sampling Techniques

For marketing of 'ogbono' two major markets namely: Oja Oba (king's market) and Bisi in Ado Ekiti metropolitan area were selected for the study. The selection process was guided by the fact that the two markets are adjudged to be the largest markets in the study area where virtually all the 'ogbono' sellers are located. The 'ogbono' sellers in the two markets belong to an association of soup condiments and ingredients known as 'Anurika' (Happiness). The association is made of 64 traders comprising of two tribes: 51 traders from Ibo tribe and 13 traders from Yoruba tribe.

Since the number of the 'ogbono' traders were few in the two markets, the whole population (64) of the 'ogbono' sellers was studied. The study however made use of data from 61 'ogbono' traders due to non-response to some vital questions from three traders. Households were however sampled on the utilization of 'ogbono'. Twenty five households were haphazardly selected per ward in the 12 wards that made up Ado-Ekiti metropolis. This made a total of 300 households. In order not to introduce bias only one household was sampled in any building where there were more than one household.

2.3 Data Collection and Analysis

Data were collected through the use of semi-structured questionnaire and interview. Data were collected on respondents' background information such as age, gender, level of education and marital status; marketing information such as sources of 'ogbono' sold, quantity sold, cost of purchase and selling price, sources of investment fund; and on problems militating the marketing of 'ogbono'. The data collected were analyzed using Descriptive statistics of frequency distribution table. The marketing efficiency of 'ogbono' was carried out using Gross Margin Ratio (GMR). GMR is the ratio of gross profit of a marketing cost to its revenue. It is a marketing profitability ratio measuring what proportion of market revenue is converted into gross profit [19]. The formula for Market GMR is as expressed below:

$$GMR = TR - TVC/TR \qquad (1)$$

$$TR = P * Q$$

$$TVC = P * X1 + P * X2 + \ldots P * Xn$$

$$GMR = P * Q - \frac{(P * X1 + P * X2 + \ldots P * Xn)}{P * Q}$$

Where: GMR = Gross margin ratio

TR   = Total revenue

P   = Price

Q   = Quantity sold;

X   = Marketing input

TVC   = Total variable cost

Percentage mention was used to rank the source of investment fund, the problems militating against the marketing and the utilization of 'ogbono' in the study area. % mention is as stated below:

$$\frac{NTVM}{NIC} X \frac{100}{1}$$ (2)

Where: NTVM = No of time a variable was mentioned

NIC = No of interviewed conducted

3. RESULTS

3.1 Socio-economic characteristics of the 'ogbono' traders in the study area

The socio-economic characteristics of the 'ogbono' traders are presented in Table 1. The highest percentage (50.8%) of the traders were between 41-50 years of age, followed by those between 31 and 40 years with 29.5%, while the least was 3.3% with ages below 30 years. Majority (93.4%) of the traders were female and 70.5% were married. Majority of the traders (65.6%) had secondary school education followed by traders with primary school leaving certificate (14.8%), while traders without formal education were 6.6%. The study also reveals that 57.4% of the respondents had household size that is between six and ten, while 29.0% had household size that is between one and five.

59.0% of the traders had less than ten years trading experience followed by 32.8% with 11 to 20 years of trading experience. All (100%) the respondents were full time traders of 'ogbono' combined with other soup ingredients such as crayfish, stock fish, melon and vegetables. The stages at which the traders were involved in 'ogbono' showed that all (100%) the traders were involved at the marketing stage only which they claimed to source outside the state.

Table 1: Socio-economic characteristics of 'ogbono' traders in the study area

Variable	Frequency (n=61)	Percentage (%)
Age (years)		
≤30	2	3.27
31-40	18	29.50
41-50	31	50.81
≥51	10	16.39
Sex		
Male	4	6.56
Female	57	93.44
Marital Status		
Single	4	6.56
Married	43	70.49
Divorced	8	13.11
Widowed	6	9.84
Educational Level		
No Formal Education	4	6.56
Primary School	9	14.75

Secondary School	40	65.57
Above Secondary School	8	13.11
Household Size		
≤5	18	29.03
6-10	35	57.38
10-15	6	9.84
≥15	2	3.28

Source: Field Survey, 2015

Table 1 Continued

Variables	Frequency (n=61)	Percentage (%)
Years of Experiences		
≤10	36	59.02
11-20	20	32.79
21-30	5	8.20
≥30	0	0
Major Occupation		
Marketing of 'ogbono' alone	0	0
Marketing of 'ogbono' and other soup ingredients	61	100
Other business	0	0
Stages of Involvement		
Gathering	0	0
Processing	0	0
Marketing	61	100

Processing and marketing	0	0
Gathering, processing and Marketing	0	0

Source: Field survey, 2015

3.2 Marketing channels and Categories of traders for 'ogbono' in the study area

There are seven stages in the marketing of 'ogbono' from the producer to the final consumer while the categories of 'ogbono' traders could be grouped into village merchants, middlemen also known as intermediary buyers, wholesalers and retailers (Figure 1). The first stage involved the farmers and wild collectors in Southeastern Nigeria who both harvest and sell the fruits or harvest and process *Irvingia* fruits into kernel ('Ogbono'). The second stage involved village merchants who rent standing trees from farmers for an agreed period of time and are thus responsible for the harvesting and processing. They also move from one village to another to buy 'ogbono' and fresh fruits for processing. The third stage are the middlemen who move from one household to the other and from one village to another within the country and to Cameroon to buy 'ogbono' and sell to other middlemen which can be in three stages. The last middlemen re-bagged the 'ogbono' into bigger bags and transport them to the main markets in Southeastern cities where they are supplied to wholesalers. At the fourth stage, the wholesalers who are located in the main markets in Southeastern cities buy 'ogbono' in bulk from the middlemen. The 'ogbono' are stored in their shops in readiness to sell to other wholesalers in various quantities. The fifth stage are the wholesalers who travel from different States of the country such as Ekiti and Ondo States to buy from the wholesalers in the main markets in Southeastern cities. The sixth stage involved the retailers who buy from wholesalers in the State and outside the State and sell in small quantities in the market to consumers which is the seventh stage.
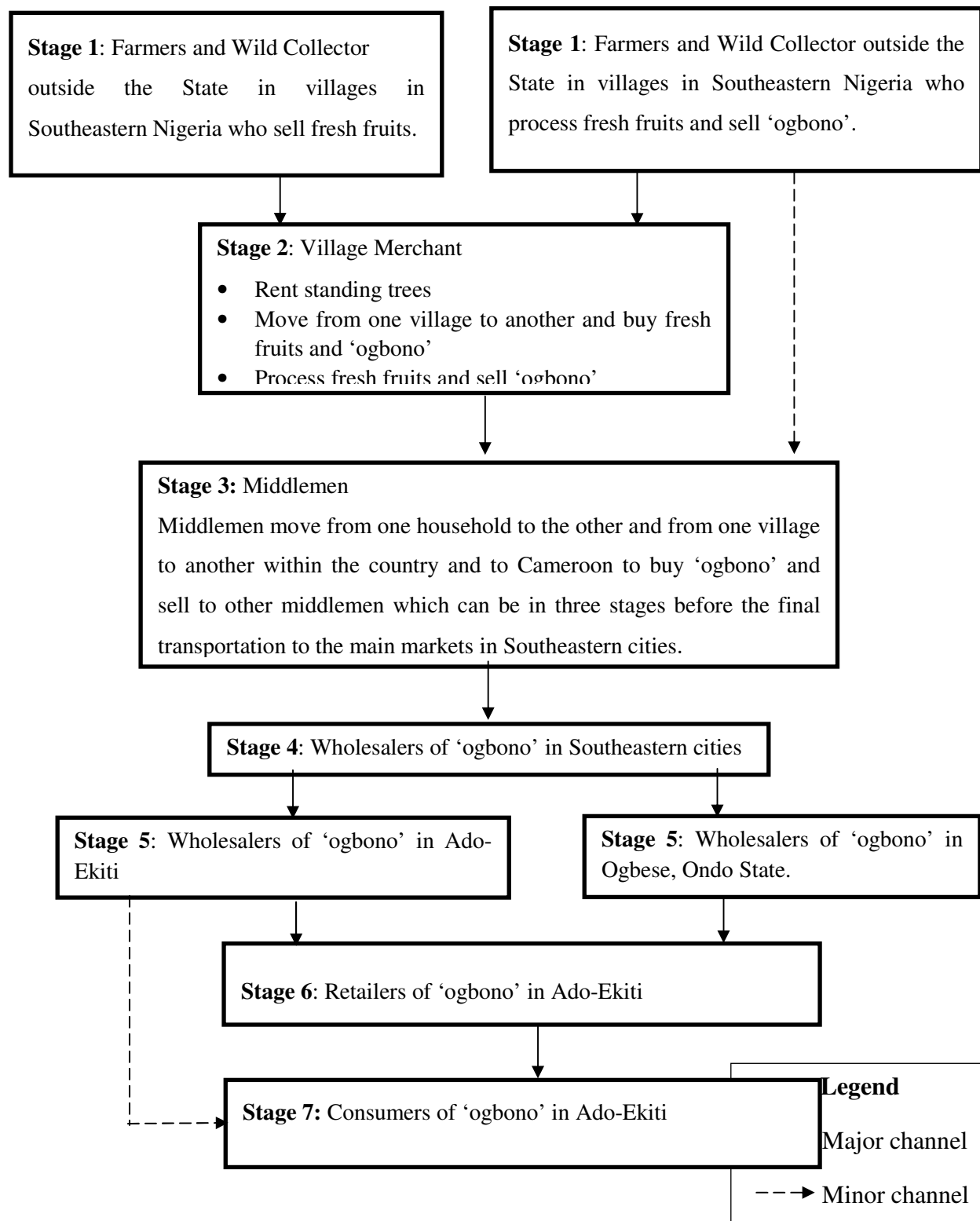
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Stage 1: Farmers and Wild Collector outside the State in villages in Southeastern Nigeria who sell fresh fruits.

Stage 1: Farmers and Wild Collector outside the State in villages in Southeastern Nigeria who process fresh fruits and sell 'ogbono'.

Stage 2: Village Merchant

- Rent standing trees
- Move from one village to another and buy fresh fruits and 'ogbono'
- Process fresh fruits and sell 'ogbono'

Stage 3: Middlemen

Middlemen move from one household to the other and from one village to another within the country and to Cameroon to buy 'ogbono' and sell to other middlemen which can be in three stages before the final transportation to the main markets in Southeastern cities.

Stage 4: Wholesalers of 'ogbono' in Southeastern cities

Stage 5: Wholesalers of 'ogbono' in Ado-Ekiti

Stage 5: Wholesalers of 'ogbono' in Ogbese, Ondo State.

Stage 6: Retailers of 'ogbono' in Ado-Ekiti

Stage 7: Consumers of 'ogbono' in Ado-Ekiti

Legend

Major channel

- - → Minor channel

Figure 1: Marketing channel for 'ogbono' in the study area

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3.3 Cost and Revenue Estimation from the Marketing of 'ogbono' In the Study Area

3.3.1 Cost components for the marketing of 'ogbono'

The cost components used in estimating the market gross margin ratio for the marketing of 'ogbono' were the variable cost. These include cost of purchasing 'ogbono', transportation, rent, tax, depreciation values of measuring bowl and containers, Packaging (Nylon) and contingency (Table 2). The cost of purchasing 'ogbono' ranged from ₦2,550 ($12.44)/kg during the season to ₦3,900 ($19.02)/kg when not in season with an average cost of ₦3,300 ($16.10)/kg per annum. Depreciation of bowl and containers was calculated using straight line depreciation method to obtain the actual amount spent per year from the fixed cost item.

3.3.2 Estimated Revenue

The revenue obtained from the marketing of 'ogbono' was ₦21,059,250 ($102,728.04) per annum. The quantity of 'ogbono' sold by the traders was 3,265kg. The selling price ranged from ₦4,500 ($21.95)/kg during season to ₦8,300 ($40.49)/kg when off season with an average selling price of ₦6,450 ($31.46)/kg for the year 2015 (Table 2).

3.3.3 Gross Margin Ratio (GMR).

The estimated GMR that was used to determine the marketing efficiency of 'ogbono' in Ado-Ekiti was 26.4% as presented in Table 2.

Table 2: Cost, Revenue and Gross Margin Ratio on the marketing of Ogbono in Ado Ekiti

Variable	Amount(₦)
A. Revenue/annum (₦)	**21,059,250.00**
B. Cost/annum (₦)	
'Ogbono'	11,289,300.00
Transportation	2,912,757.00
Rent	402,200.00
Tax	150,140.00
Packaging (Nylon)	9,300.00
Depreciation value of measuring bowl	8.00
Depreciation value of container	200.00
Sub-Total	**14,763,905.00**
5% Contingency	738,195.25
Total Cost((₦)	**15,502,100.25**
Gross Margin	**5,557,149.75**
Gross Margin/Trader	**91,100.82**
Gross Margin Ratio (%)	**26.39%**

Source: Field survey, 2015

3.4 Ranking of the sources of investment fund for 'ogbono' marketers, sources of purchase and the major problems militating its marketing and its utilization.

Ranking of the sources of investment fund as shown in Table 3 shows that the respondents who took loans from cooperative ranked highest with 93.4%. This was followed by those with contract arrangement with buyers with 73.8%. Those whose sources of investment were from personal savings from previous business ranked third with 13.1% and the least rank were those who borrowed money from friends and relations with 4.9%. Sources of purchase shows buying outside the State by all (100%) the traders ranked highest, followed by buying within the State with 9.8% while buying outside the Country ranked the least with 3.2%. Major problems

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militating 'ogbono' marketing shows that non- availability of 'ogbono' ranked first with 90.2%, followed by transportation problem with 86.9%, fund ranked third with 83.6% while storage ranked the least with 11.5%. The utilization of 'ogbono' in the study area shows that it was mainly used as soup condiment with 91.7% while its uses for burns treatment and as anti-venom in treating snake bites ranked 2nd and 3rd with 18.3% and 13.3% respectively.

Table 3: Ranking of the sources of investment fund for 'ogbono' marketers, the major problems militating its marketing and its utilization.

Variables	No of time mentioned	Percentage (%)	Rank
Sources of Investment Fund			
Loan from cooperative	57(61)	93.44	1st
Contract arrangement with buyers	45(61)	73.77	2nd
Personal savings from previous business	8(61)	13.11	3rd
Borrowing from friends and relations	3(61)	4.92	4th
Sources of Purchase			
Outside the State	61(61)	100	1st
Within the State	6(61)	9.84	2nd
Outside the Country	2(61)	3.20	3rd
Major Problems			
Non Availability	55(61)	90.16	1st
Transportation	53(61)	86.89	2nd
Fund	51(61)	83.61	3rd
Storage	7(61)	11.48	4th
Utilization of Ogbono			

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Soup Condiment	275(300)	91.67	1st
Treating Burns	55(300)	18.33	2nd
Anti-Venom	40(300)	13.33	3rd

Note: Figures in brackets are the numbers of respondents interviewed

Source: Field survey, 2015.

4. DISCUSSION

The study revealed that marketing of 'ogbono' is gender sensitive in the study area as 93.4% of the traders were female. This observation is consistent with the findings of previous studies that women are mostly involved in the gathering, processing and marketing of NTFP's such as 'ogbono' [20, 21]. Reasons that may be adduced for the involvement of women is that income from NTFP's activities is generally regarded as being marginal and are thus traditionally considered to be women affairs. The fact that the highest percentage (50.8 %) of the traders were of middle age between 41-50 years implies that they are active people who can still move around for 'ogbono' business transaction. The result on the level of education revealed that majority of the traders (65.6%) had secondary school education. From this finding, it means that marketing of 'ogbono' requires basic education since it is a trade that requires adapting to changes in price variation, market information and new innovation. The study further revealed that all (100%) the marketers claimed to source for 'ogbono' outside the state of the study area. This finding shows the dwindling supply of 'ogbono' in the study area. Agbor [6] reported the scarcity of 'ogbono' as production fails to keep up with increasing demand in Nigeria. The reduction in the quantity of *Irvingia* species in Southwest Nigeria for the past five years was also reported [14]. This scarcity is due to the fact that most farmers maintain matured bush mango trees that are already growing on their land and would rather prefer to transplant wild seedlings onto their farm than planting large area with seeds [13]. According to Ladipo [5] less than 10

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percent of the total annual harvest of *Irvingia* fruits is harvested from planted trees grown from seedlings while the rest are collected from the dwindling natural forests.

4.1 Marketing channel of 'ogbono' in the study area

The marketing channel revealed that 'ogbono' passed through the hands of several middlemen known as intermediaries buyers before reaching the wholesalers in the main markets. The situation where several middlemen are engaged is not a normal marketing channel for better profit to wholesalers and retailers while consumers are at the receiving end of the higher prices. The wholesalers would have to sell at higher prices to retailers while the retails' prices are also high in order to accommodate transportation cost and the profit taken by the middlemen.

It was observed during the course of this study that this abnormal marketing channel coupled with the distance covered since traders traveled outside the state had serious effect on the marketing efficiency of 'ogbono'. Reason being that retailers had to struggle to bring their goods to market in the study area after purchase. In most cases the quality of the product had already deteriorated before getting to the final consumers in the market and consumers had no choice than to buy the deteriorated 'ogbono' at high price. The selling price of 'ogbono' was almost twice the cost. The cost of transporting to market also tends to reduce the profit margin accruable to the retailers. Adegeye and Dittoh [22] also reported this abnormal marketing channel and identified four classes of middlemen between producer and wholesalers in the marketing channel of food in Nigeria, with some of them having overlapping functions. They are: farm-gate middlemen, commissioned agent, non-commissioned agent and cooperative marketing agency. According to Agbor [6] improving the market functions such as good road

will facilitate transportation of processed goods such as 'ogbono' to main markets by the processors and thus reducing the number of middlemen to minimum and keeping prices low.

4.2 Marketing Efficiency of 'Ogbono'

The findings of the study show that the estimated GMR that was used to determine the marketing efficiency of 'ogbono' was slightly high enough to offset the prevailing bank interest rate of 24%. The GMR was 26.4%. This shows that there are impediments to marketing efficiency of 'ogbono' in the study area. Nelson [19] is of the opinion that higher values of GMR indicate that more kobo are earned per naira of revenue on marketing which is favorable because more profit will be available to cover marketing costs. Reason that could be deduced for the low GMR obtained is the abnormal marketing channel coupled with the distance covered since traders traveled outside the state to purchase 'ogbono'.

5. CONCLUSION AND RECOMMENDATION

This study has shown that there were impediments to the marketing efficiency of 'ogbono' in the study area since the GMR obtained (26.4%) was only slightly high enough to offset the prevailing bank interest rate of 24%. The marketing channel which is 'informal' and 'abnormal' as several middlemen are engaged in the marketing of 'ogbono' coupled with the fact the traders traveled long distance outside the state to purchase 'ogbono' had adverse effect on the marketing efficiency of 'ogbono' in the study area.

In order to improve the marketing efficiency of 'ogbono', the acute shortage in the study area calls for urgent need to be directed at encouraging farmers to pursue vigorously the establishment of *Irvingia gabonensis* and *Irvingia wombolu* plantation in the study area. Extension workers and the Non-Governmental Organization (NGO) should be engaged in

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creating awareness on the benefits that would accrue from planting while incentives such as free distribution of seedlings can be provided through the State Forestry Department. There is the need to ensure good road between farm-settlements and main markets so as to facilitate the transportation of 'ogbono' to the main markets by the processors rather than selling through several middlemen. This will go a long way in reducing the number of middlemen and keeping prices low and thus enhancing a normal marketing channel while improve the marketing efficiency.

REFERENCES

1.   Harris DJ. A revision of the Irvingiaceae in Africa. Bulletin du Jardin Botanique National de Belgique. 1996;65: 1-2 pp.143-196.

2.   Okafor JC. Varietal delimitation in *Irvingia gabonensis* (*Irvingia* ceae). Bulletin du Jardin Bota nique National de Belgique. 1975;45: 1-2 pp.211-221.

3.   Leakey RRB, Fondoun JM, Atangana A, Tchoundjeu Z. Quantitative descriptors of variation in the fruits and seeds of *Irvingia gabonensis,* Agroforestry systems. 2000;50, 47-58.

4.   Ladipo DO. The development of quality control standards for Ogbono (*Irvingia gabonensis* and *Irvingia wombolu* kernels): Efforts towards encouraging organized and further international trade in a non-wood forest product of West and Central Africa. CARPE: Limbe non-wood forest products workshop. 1997. Web address: http://carpe .gecp.virginia.edu/products/products2a.asp Accessed May 2015

5.   Ladipo DO, Fondoun JM, Ganga N. Domestication of the bush mango (*Irvingia* spp.): some exploitable intraspecific variations in west and central Africa. From: Domestication

and commercialization of non timber forest products in agroforestry systems. Proceedings of an international conference held in Nairobi, Kenya 19-23 February 1996. Non Wood Forest Products 1996, No. 9, pp.193 205; Published by: Food and Agriculture Organization (FAO); Rome; Italy. 1996.

6.   Agbor LON. Marketing trends and potentials for *Irvingia gabonensis* products in Nigeria. ICRAF-IITA Conference on *Irvingia gabonensis*; Ibadan, Nigeria; May 1994.

7.   Leakey RRB. Potential for novel food products from agroforestry trees: A review. Food-Chemistry. July, 1999; 66:1 pp.1-14.

8.   Joseph JK. Physico-chemical attributes of wild mango (*Irvingia gabonensis*) seeds. Bio-resource Technology. 1995;53: 2 pp. 179-181.

9.   Adamson I, Okafor C, Abu-Bakare A. Erythrocyte membrane ATPase in diabetes: Effect of *Irvingia gabonensis* enzyme. 1986;36:3 pp.212-215.

10.   Onyekwelu JC, Stimm B. "*Irvingia gabonensis*, (AubreyLecomte ex O. Rorke) Baill," in *Enzyklopadie der Holzgew ¨ achse ¨* ,P. Schutt, H.Weisgerber, H. J. Schuck, and A. Roloff, Eds., vol. 43 ¨of *Erganzungslieferung ¨*, p. 14, Ecomed, Munich, Germany, 2006

11.   Nwoboshi LC. "Meeting the challenges of deforestation in Nigeria through effective reforestation," in *Proceedings of the 1996 Annual Conference of the Forestry Association of Nigeria*, A. B. Oguntala, Ed., Minna, Nigeria, 2000.

12.   Ndoye O, Perez MR, Eyebe A. The markets of non-timber forest products in the Humid Forest Zone of Cameroon. Network Paper Rural Development Forestry Network 22c. Rural Development Forestry Network, Overseas Development Institute (ODI); London. 1998.

13. Ayuk ET, Duguma B, Franzel, Kengue J, Mollet M, Tiki-Manga T, Zenkeng P. Uses, management and economic potential of *Irvingia gabonensis* in the humid lowlands of Cameroon. *Forest Ecology and Management.* 1999;113: 1 pp.1-9.

14. Babalola FD, Abeja BO. Marketing of *Irvingia spp* (Bush mango) in Southwestern Nigeria: prospects and challenges. *Research Journal of agriculture and Biological sciences.* 1999; 5(6): 944-953.

15. Armstrong G, Kotler P. Marketing and Introduction. 5th Ed. Prentice-Hall, England. Extraordinary Federal Republic of Nigeria official Gazette (NPC), (2007). Federal office of statistic Abuja. 2000.

16. Popoola L, Oluwalana, SA. Marketing of non-timber forest products in Nigeria. In A. O Adeola, J. A. Okojie & L.O Ojo (2001,eds) Proceedings of Colloquium on Biodiversity of Rainforest Ecosystems in Nigeria organized by FEPA-UNAAB Linkage Centre for Forests, Conversation and Biodiversity held in Abeokuta, 8-10 December, 1998. Pp 137-152. 2000.

17. FAO. Products and Markets. In; Non-wood News. No16 pp 26-40. 2008

18. National Population Commission. Nigeria's Census Summary, 2007 from the office of National Population Commission, Abuja, Nigeria. 2007. Retrieved September 15 2014, from http://www.nigeriannews.com

19. Nelson LS. QuickBooks 2008 All-in-One Desk Reference For Dummies. Published by Willey Publishing Inc 111. 2008. Retrieved September 10, 2014 from https://books.google.com.ng/books?id=nznYrHHF22ICandpg=PA370anddq=calculation+profitability/+ratio

20. Okafor JC. Strategies for the Development of fruit tree and Non-Timber Forest Product in Nigeria. *Proceeding of the 23rd Annual Conference of FAN*. 1993. Pp 13-18.

21. Arowosoge OGE, Popoola I. Economic analysis of *Thaumatococcus danielli* (miraculous berry) in Ekiti State, Nigeria. *Journal of Food, Agric. and Environment.* 2006;4(1): 264-269.

22. Adegeye AJ, Dittoh JS. Essentials of Agricultural Economics. 1st Edition *Impact Publishers Nig. Ltd.* Ibadan. 1985. Pp 164-182.