

Economic Analysis of Walnut Marketing in Oyigbo Local Government Area, Rivers State, Nigeria

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Abstract:

The study examined the economic analysis of walnut marketing in Oyigbo Local government area of Rivers State, Nigeria. A total of sixty respondents were drawn using purposive and random sampling technique from the three communities in the study area. Data were generated using structured questionnaire and interview schedule method. Descriptive statistics and gross margin analysis were used in data analysis. Percentage was used to describe the socioeconomic variables, marketing channels and constraints encountered by walnut marketers while gross margin were used to determine the Profitability. Results from the study revealed that majority of the marketers (61.7%) were female and have average mean age of 49 years. The marketing experience was 12 years and majority of the marketers source their walnut from itinerant buyers. The profitability test shows that gross margin was N66, 480.73. It was observed that high rate of perishability; inadequate storage facilities and high transportation cost were their major constraints affecting walnut marketing in the study area. Based on the fact that walnut marketing is profitable. It is recommended, that government and Non-governmental organizations should setup projects that will improve on the species and make available modern facilities for storing and processing walnut. Farmers should be encouraged to grow walnut in this part of the region in order to minimize cost and maximize its benefits efficiently.

Keywords:

Economic Analysis, Walnut, Marketing Oyigbo, Rivers State

1. Introduction

The Africa walnut (*Tetracarpidium conophorum*) is from the family Euphorbiaceae. It is a perennial climber found in most forest zone of sub-Sahara Africa [26].

Globally walnut industries and trade have been expanding at a substantial rate [22,9,15]. This has been associated with increased production and consumption of this snacks in both developed and less developed countries particularly china. In 2014, worldwide production of walnut was 3.4 million tons with china contributing 46% of

the world total and United State the world largest exporter of walnut followed by Turkey [9].

The Africa walnut is a climber in the sense that it grows as a vine and settles at the apex of a supporting tree forming a canopy and shade to other smaller plants and herbs. They are usually planted under an indigenous tree that can provide support for the heavy weight of the climber when fully established on the crown of the tree and in case where they cannot be harvested manually, they are left for full maturation after which the pod falls off by itself and are picked, removed from the rotten pods, washed and sold in the market [23].

In West Africa especially in Nigeria, Sierra Leone, Central Africa and Cameroon, the seed provide income to the rural people thereby improving their economy. Demand in the sub-region is strong for the Africa walnut and the findings of new survey in Cameroon revealed its huge potential to bring socio-economic and environmental gains. Nigeria walnuts are edible singled seeded stone fruit whose plant is mostly cultivated for its nuts which is cooked and consumed as snacks. Walnut fruit is predominately found in the southwest state in Nigeria, it is characterized by a black thick wall that envelopes a white-cream seed which leaves a bitter flavor in your mouth when consumed raw like kola.

Walnut plant flowers between November and early January and fruits between January and November with peak production in July. Walnuts have various species such as Euphorbiaceae (*Tetracarpidium conophorum*) and Olaceae (*Coula edults*). Different tribes in Nigeria have different names for this nut. In Yoruba it is known as or Awusa or Alasa, in Hausa it is known as Gwandi bari, in Igbo it is known as Ukpa, in Edo and Delta state it is known as Okhue or Okwe, in Benue state it is known as Arinsa, and in Cross River and Akwa Ibom States it is known as Ekporo [3].

In Nigeria the seeds are reportedly used to treat male infertility and its bark and leaves are used in traditional medicine to ease dysentery and other diseases. [8].

According to Babalola [8], neither the producers nor the marketers engage in direct sales of the product. The village merchant moves from village to village and market to market to buy the available raw nuts. The bulk of walnut are consumed in the city, therefore the village merchant transport the products to the wholesalers in the cities and towns for onward distribution to the retailers. A high selling price is obtained by both the producer and marketers when there is less quantity of the product in the market. Despite its current low industrial application, walnut can fetch Nigeria over ₦100 billion annually and create direct employments for over 5000 people if the value chain for production, handling, processing and marketing of the commodities are properly developed [27].

To enhance increased productivity of walnut and development of its value chain, it is important that small scale farmers at the local level which constitute the producers should be encouraged through necessary inputs in order to promote full scale production and exploration of its potentials. Walnut compared to other nuts is considered the king of nuts as it is so rich in vitamins, minerals, proteins, fibers, healthy fats, plant sterols and antioxidants. It is also medicinal, therapeutic and stimulating in nature due to its high constituent of anthraquinones, tannins, saponins and alkaloids. Researches have shown that walnut boost your health in a number of ways and at a very easy-to-achieve dose (Chigoke et al., 2016).

In Oyigbo local government area in Rivers state, walnut marketing are mainly done by women and children who buy the available walnut from the merchant and sell in town to the consumers who buy at a cheaper rate. In recent study, walnut marketing and distribution have not been fully developed in Nigeria due to inadequate information of its benefits and its perennial nature making it unavailable all year round. The marketing process is affected by bad road network for easy distribution of the produce from the rural areas to the urban centers where they are mainly consumed. In addition there were unavailability of planting material coupled with unstructured market for easy distribution of walnut, inadequate storage facilities resulting to loss of large quantities by insects and fungal which may result to health issues when consumed making the demand of the produce to drop. At this point it is pertinent to state the objectives of this study as follows: a. describe the socio-economic characteristics of walnut marketers; b. identify walnut marketing channels; c. determine the profitability of walnut marketing; d. identify the constraints encountered by walnut marketers.

2. Materials and Methods

The study was conducted in Oyigbo local government area of Rivers state, Nigeria. Rivers state is situated in the south-south geopolitical zone, it lies between longitude $06^{\circ}45'1''E$ to $07^{\circ}00'1''E$ and latitude $04^{\circ}01'3''N$ to $05^{\circ}00'1''N$ with a land area of 11077km^2 (4277sqm). Rivers state is bounded in south by the Atlantic ocean, to the North by Imo, Abia and Anambra to the East by Akwa Ibom state and to the West by Bayelsa state and Delta state. The state is made up of 23 local government areas with a total population of 5183,400 people (Nigeria population commission, 2006). The state is home to many indigenous ethnic groups such as Ikwerre, Ibani, Opobo, Eleme, Kalabari, Ogoni etc.

Oyigbo Local Government Area lies between longitude $4^{\circ}52'41''$ (4.8781°) north and latitude $7^{\circ}7'42''$ (7.1283°) east, elevation 22meters (72 feet) it is characterized by alternate wet and dry seasons with annual rainfall of between 160mm and 298mm, relative humidity of over 90% and mean temperature $27^{\circ}C$ (Bassey, 2000). The study population comprises of all walnut marketers in the selected communities of Oyigbo local government area of Rivers state.

Model Specification:

Gross margin analyses were used to analyze the profitability of walnut marketing in Oyigbo local government area.

$$GM=TR-TVC \quad (1)$$

$$TR= PXQ \quad (2)$$

Where;

GM= Gross margin of the walnut marketers in the study area

TR=Total revenue in naira derived by the walnut marketers in the study area

TVC=Total variable cost in naira incurred by walnut marketers in the study area

P=Price of walnut per bag

Q=Quantity of walnut per bag.

3. Results and Discussion

3.1. Socio-economic Characteristics of Walnut Marketers

The result on the Table 1 below, shows that majority (61.7%) of the marketers are female. This implies that female dominate in walnut activity. This finding is in consonance with the finding of Barkar and Usman, [29] who asserted that marketing of fruits resources like walnuts in Yola North and South Local Government Area of Adamawa State were dominated by female. This could be attributed to the fact that women are better off in marketing in terms of favor and being able to attract customers than men. Also (46.7%) of walnut marketers in the study area were between the ages 25-54 years while their mean age was 49years. This indicates that majority of the respondents are in their economic active age and can easily adapt to innovations and withstand the drudgery nature of marketing walnut. Respondents marital status has shown that only (50%) of the respondents were single. This implies that marketing of the produce would be maximized as most of the marketers are still in their youthful age and has the ability to diversify to other business activities in order to generate income especially during off-season. Their level of education in table1, below revealed that (53.3%) attained secondary school education. This implies that respondents have low formal education attainment. According to Nwaru and Iwuji, [24] education has positive relationship with marketing margin because of its capabilities to unlock potentials that assisted marketers to be informed, innovatively and averse to marketing risks. Most of the respondents (58.3%) have been in this walnuts business for 1-10years while their mean year of experience was 12 years. This substantiate the findings of Ali et al, [4] who observed that marketing experience were important in determining the profit level of marketers because, the more experienced the more they understands the marketing systems. In terms of scale of operation (66.7%) of the respondents are involved in retailing walnut as a result of high profits generated and ease of distribution to the final consumers. This finding is in line with Babalola, [8] on the marketing of African walnut in southwestern, Nigeria. This may be attributed to the level of profit realized after sales. Despite the facts that respondents main income source were marketing of walnut. Majority (76.7%) claimed that they have other sources of income for example sales of fruits and vegetables. This implies that they engaged in other business activities in order to meet up other expenses as walnut is a seasonal fruit. The result on the table below shows that majority (66.7%) of the respondents have an income range of (₦200,000 – ₦400,000) per annum.

Table 1. Showing the distributions of respondents according to their socio –economics characteristics in the study area.

GENDER			
VARIABLES	FREQUENCY	MEAN	PERCENTAGE
Male	23		38.33
Female	37		61.67
Age			
0-14	3	49 years	5
15-24	17		28.3
25-54	28		46.7
55-64	6		10.0
65 and above	10		10.0
Marital Status			
Single	30		50

Married	20		33.3
Separated	4		6.7
Divorced	2		3.3
Widowed	4		6.7
Level Of Education			
No formal education	3		5
Primary	19		31.7
Secondary	32		53.3
Tertiary	6		10
Years of Experience			
1-10	35	12 years	58.3
11-20	18		30.1
21-30	5		8.3
31-40	2		3
Scale of Operations			
Wholesaler	15		25
Retailer	40		66.7
Both	5		8.3
Other Sources of Income			
Fruits/Vegetable	46		76.7
Medicinal roots /herbs	3		5
Others	11		18.3
Income Status (₦)			
Less than 100,000	15		25
200,000 – 400,000	40		66.7
500,000 – 700,000	3		5
Above 1,000,000	2		3.3

Source: Field Survey Data, 2020

3.2. Walnut Marketing Channels in the Study Area

Table 2 below, indicates that only (38.3%) of walnut marketers sources walnut through iterant buyers, while (16%) and (45%) sources walnut through wholesalers and retailers respectively. This indicates that iterant buyer's purchases majority of the produce as a result of unorganized nature of walnut marketing and retailers prefers buying directly from the iterant buyers as they buy at a cheaper rate.

Table 2. Showing distribution of walnut marketer according to their distribution network in the study area.

Distribution Network	Frequency	Percentage
Wholesaler	10	16.7
Iterant buyers	23	38.3
Retailers	27	45
Total	60	100

Source: Field survey data, 2020

3.3. The Profitability of Walnut Marketing

The result on Table 3 below shows the profitability of African walnut. The result shows that Total Revenue (TR) from sales per annum was N90, 841.67. Total Variable Cost (TVC) were N24,360.93, Gross Margin were N66,480.73, Total Fixed Cost (TFC) were N 11,608.12, Total Cost (TC) N35,969.05 and Net Profit (NP) were N54,872.62. This implies that walnut marketing is profitable. This result is in agreement with Bruce Thompson [12] that walnut marketing is profitable.

Table 3. Profitability of Walnut Marketing in the Study Area.

Items	Amount (₦)	Amount in Naira and kobo (₦)	% Total Cost
Total Revenue from Sales per annum		90,841.67	14.3
Variable Cost			
Cost of purchase	13,765.00		6.5
Total transportation cost	5,391.67		12.3
Sack and jute bags	3,066.67		5.1
Cost of cooking	2,137.50		4.7
Total Variable Cost (TVC)		24,360.93	
Gross Margin (GM)		66,480.73	
Fixed Cost			
Rent on stores	2572.42		5.8
Allowance for sellers	2,466.67		6.5
Market levies	2,815.70		5.5
Wheelbarrow	2,041.67		2.2
Trays	1,711.67		3.1
Total Fixed cost (TFC)		11,608.12	
Total Cost (TVC +TFC)		35,969.05	
Net Profit (GM-TFC)		54,872.62	

Source: Field Survey Data, 2020

The result on Table 4 below shows multiple responses of constraints faced by walnut marketers in the study area as most of the respondents encountered more than one constraints listed. The result above shows that majority (30.6%) of the marketers identify high rate of perishability of the product as a major constraint. This implies that walnuts are susceptible to high rate of perishability due to insects, fungal and mould infestation. This in turn affects the profits of the marketers negatively. This is in agreement with the study of Adewumi et al, [1] reported that insects and fungal contributes to the losses of agricultural produce to perishability. Other major constraints include: Inadequate storage facilities (22.1%) imply that an inadequate storage facility increases the rate of perishability. This in turn has a negative influence on the profit of walnut marketers. This result is in consonance with Idah et al. [17] that 50% of losses common in fruits and vegetables occur during transportation, storage and marketing.

High cost of transportation (10.1%) indicates that high cost of transportation is one of the major constraint of walnut marketing as much of the produce is been gotten from the western states. This implies that high cost of transportation reduces the profitability by increasing the total variable cost. This is in agreement with the study of Izekor and Abiola, [18] that reported that high cost of transportation are major constraints to post harvest losses in green vegetable marketing.

Table 4. Distribution of Walnut Marketers According to Constraints Encountered in the Study Area.

Constraints Encountered	Frequency	Percentages
High cost of transportation	40	10.1
Inadequate storage facilities	48	22.1
Inefficient marketing systems	8	2.0
Difficulties in gathering	10	2.5
Price fluctuation	4	1.0
High incidence of pest infestation	3	0.8

High rate of perishability	42	30.6
Low market price	2	0.5
Inadequate extension services	3	0.8
Poor road network	4	3.2
Problem of climate change(excessive flooding)	38	9.6
Lack of innovations	6	1.5
Proximity problems	18	4.5
Inadequate finance	15	3.8
High market tax	12	3.0
Poor perception on consumption	8	2.0
Problem of physical appearance	8	2.0
Total	369	100

Source: Field survey data, 2020

NB: Multiple Responses Recorded

4. Conclusions and Recommendations

This study has shown that walnut marketing in Oyigbo local government area of rivers state is dominated by womenfolk and is profitable. It is therefore recommended that government and Non-governmental organizations should setup projects that will improve on the species and make available modern facilities for storing and processing walnut. Farmers should be encouraged to grow walnut in this part of the region in order to minimize cost and maximize its benefits efficiently.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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