

PROFITABILITY OF OIL PALM PRODUCTS IN NKAMA EAST LOCAL GOVERNMENT ENUGUN STATE, NIGERIA

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Abstracts

This study analyzed the profitability of oil palm products in Nkamu East Local Government Area, Enugu state, Nigeria. A total of 120 oil palm products marketers were sampled through multi stage random sampling technique. Data were analyzed using descriptive statistics, marketing margin analysis and stochastic profit frontier model. It was revealed that majority of the oil palm marketers are male (55.8%), most (37.5) of the respondents fell within the active range of 31-40 years, with a mean household size of 8. The gross margin analysis revealed that the average total cost incurred by the respondents per product was N1, 434,364.34 while total revenue of N2, 031,733.33 for palm oil, was realized thereby returning marketing margin of N633, 836.33 and net farm income of N597, 368.99. The Benefit-Cost Ratio (BCR) of 1.42, indicating high efficiency. Basket production is profitable, with a marketing margin of N265,082.63 and a high BCR of 1.58, Broom production demonstrates moderate profitability with a marketing margin of N107,711.67 and a BCR of 1.33. PKO production generates a moderate profit, as indicated by its BCR of 1.17. Palm wine production shows low profitability, with a BCR of 1.20, indicating limited returns. This confirmed that, oil palm products marketing in the study area is profitable. The Likert scale model revealed that the major constraints facing oil palm products marketers in the study area were, inadequate capital, scarcity of products, storage facilities, and poor access to products credit.

Keywords: Profitability, Oil palm, Socioeconomic, Marketing margin

Introduction

Oil palm (*Elaeis guinensis*) is economically one of the most significant global oil crop (Murphy *et al.*, 2021). It is a monoecious plant belong to the family palma

(Ihenacho and Okorie 2020). is indigenously African tree crop (Oyebamiji *et al.*, 2022). It is highly versatile crop that provides raw materials for various industrial uses, domestic uses also the fruit is mainly processed into three major commercial product which are palm oil, palm kernel oil and palm kernel cake (Idiaye *et al.*,
Volume 29(1): 7662-7667 2026

2022). In Nigeria, oil palm has cultural and traditional important among the people (Amafade and Ovharhe 2023). However, oil palm remains a vital part of rural economies, particularly in regions like Nkanu East Local Government Area (LGA), Enugu State, where it contributes significantly to livelihoods and rural development.

This study seeks to examine the profitability of oil palm products in Nkanu East, analyzing costs, revenues, and factors influencing marketing efficiency.

Objectives of the study

The broad Objective of the study is to evaluate the marketing efficiency of oil palm in Nkanu Enugu state. The Specific objectives of the study are to:

1. Identify the socio-economic characteristics of the respondent in the study area.
2. Estimate the costs and returns to oil palm products in the study area.
3. Estimate marketing efficiency of the respondent
4. Identify the constraints facing the level of oil palm production in the study area.

Methodology

Study area

The study was conducted in Nkanu East Local Government Area of Enugu State. Nkanu East, as one of the seventeen Local Government Area in Enugu State, is an Igbo dominated tribe and one of the Local Government in Enugu East Senatorial Zone that falls within the savannah region of the former Eastern Nigeria, usually characterized by tall trees and grasses. Its headquarters is in the town of Amagunze. The study area is bounded in the North by Ishielu Local Government Area of Ebonyi State and Isi – Uzo Local Government Area of Enugu State, in the south by Ohaozara Local Government Area, of Ebonyi State, in the East by Enugu East Local Government Area of Enugu State and in the west by Aninri Local Government Area, Enugu State. It has a population of 148,774, and a landmass of 795 km². The people of the L.G.A are mainly agrarians, some economic activities engaged by the people also hunting, vulcanizing, road

side mechanic, petty trading, barbing salon, palm oil marketing and palm wine marketing.

Sampling procedure

Data for this research was collected from primary and secondary source. Multistage sampling procedure was used to selecting the communities, Villages and Marketers for this study. The first stage involved a purposive selection of six (6) communities out of the thirty-three communities that made up the Local Government Area. In the second stage, simple random sampling techniques was used to select four village from each of the selected communities making a total of 24 villages. In the third stage, five (5) palm oil marketers were randomly selected from each of the selected villages to get a total of one hundred and twenty (120) palm oil marketers which is the sample size for the study. Primary data was used in the study area. Data were collected using a structured questionnaire; with the oil palm marketers being the unit of the analysis.

Analytical techniques

Data collected was subjected to descriptive analysis such as frequency counts, tables and percentages, to analyze socio-economic characteristics of respondents. Budgetary analysis was used to examine efficiency of oil palm marketers while the stochastic frontier production function was used to analyze the technical efficiency of the respondents in the study area.

Marketing margin analysis: This was used to determine the cost and return of oil palm products in the study area. The gross margin is represented by:

$$MM = TR - TVC$$

TR=Total revenue

TVC= Total variable cost

$$BCR = (\text{Benefit cost ratio}) = TR/TC$$

Stochastic production Frontier Approach:

This was used to determine the profit efficiency and determine the factors influencing the profit efficiency of oil palm marketers in the study area. The model is specified as follows:

$$Y = f(x_i, \beta) e^{v_i - u_i}$$

Where Y is the dependent variable, f(x) is the functional form, β is the technical coefficient,

v_i is the random component which assumed to be identically and independently distributed with Mean zero, and u_i is the inefficiency effect of the firm.

ME = marketing efficiency index of oil palm

V = value of oil palm sold in ₦ or consumer price

I = Total marketing cost of oil palm in ₦

Ordinary least square multiple regression will be used to identify the factors determining the marketing efficiencies of oil palm products as follows:

$$Y \text{ (oil palm marketers)} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_{13} X_{13} + \mu_i$$

Where:

Y = (oil palm marketers) = marketing efficiency index of oil palm

β_0 = constant, β_1 = coefficient of the explanatory variables

X_1 = age of the respondent in years, X_2 = sex of marketer (male = 1: female = 0)

X_3 = level of education, X_4 = Household size (number of household)

X_5 = marketing experience in years X_6 = access to credit (yes = 1: no = 2)

X_7 = membership of market association (yes = 1: no) X_8 = cost of purchasing palm oil

X_9 = selling price of palm oil products ₦ X_{10} = distance to market in km

X_{11} = access to storage facilities (yes = 1, no = 0)

X_{12} = Extension of contract marketing arrangement (yes = 1, no = 0)

μ_i = Error term

Result and Discussion

Socioeconomic Characteristics of Respondents

The finding in Table 1 shows the Male (55.8%) respondents constitute a larger proportion of oil palm marketers than the Female (44.2%). This implies that male are more involved in oil palm marketers than female counter part in the study areas. This agree with ((Andrea and Mishili (2023) which reported that Male are more engaged in oil palm activities than their female counters parts.

The age of respondents is predominantly between 31-40 years (37.5%), with a mean age of 48 years suggests a middle-aged group involved in oil palm production. This age group they are regarded as young adult and may face challenges related to physical labor or access to new farming technologies but they often has significant experience in farming which is of great value to oil palm production. The majority of respondents have Secondary Education (31.7%) and Tertiary Education (31.7%), with No Formal Education (3.3%) being the least represented. Married respondents (70%) form the largest group, suggesting that oil palm production is often a family-oriented business. Married producers may have access to labor from family members, which helps reduce operational costs. The result also showed the mean household size of 8, larger households

Table 1: Socio-economic Characteristics of oil palm producers in the Study Area N =120

Variable	Frequency	Percentage
Sex		
Male	67	55.8
Female	53	44.2
Age		
<30	18	15.0
31-40	45	37.5
41-50	27	22.5
50-60	22	18.3
> 60	8	6.7
Mean	47.52	
Educational Qualification		
No formal Education	4	3.3
Primary Education	15	12.5
Secondary Education	38	31.7
Adult/Vocational	38	31.7
Tertiary	25	20.8
Marital Status		
Single	17	14.2
Married	84	70.0
Divorced	10	8.3
Widowed	9	7.5
Household size		
< 5	42	35.0
6-10	46	38.3
> 10	32	26.7
Mean	8.13(±4.19)	
Marketing Experience		
< 5	60	50.0
6-10	56	46.7
11-15	3	2.5
> 15	1	0.8
Oil palm products		
1	4	3.3
2	22	18.3
3	54	45.0
4	33	27.5
5	7	5.8
Mean	3.14 (± 0.901)	
Religion		
Christianity	88	73.3
Islamic	13	10.8
Traditional	19	15.8

Source: Data from field survey 2025

may contribute more labor to farm operations (Nwodo et al, 2024). 50% of respondents have less than 5 years of marketing experience, while only (0.8%) have over 15 years of experience. Majority(45.0%) of the marketers sales 3 products on daily basicwhile (3.3%)of the respondent sales only one products with a mean of 3 .The majority of respondents are Christians (73.3%), with Muslims (10.8%) and Traditionalists (15.8%) forming smaller groups. Religion often plays an important role in shaping social and community

structures, also religious organizations may be a source of support for oil palm marketers (Eze & Nwosu, 2020).

Cost and Returns to Palm oil in the Study Area

Palm oil production is highly profitable, with a marketing margin of ₦633,836.33 and a Benefit-Cost Ratio (BCR) of 1.42, indicating high efficiency. The relatively low fixed costs (₦36,467.34) contribute to its profitability. 42% return on investment reflects Palm oil's strong performance in the market. Efficient cost

management and substantial revenue generation make Palm oil a highly viable product. All the oil palm products are profitable since their Benefit Cost Ratio is

greater than one in the study area, Palm oil (0.42), Basket (1.58), Broom (1.33), Palm kernel oil (1.17) and Palm wine (1.20) respectively.

Table 2: Cost and Returns to oil Palm products in the Study Area

Cost item	Palm oil	Basket	Broom	PKO	Palm wine
Total variable cost	1,397,897	429,182.37	287,642.5	574,604.16	17,491.93
Total Fixed cost	36,467.34	8,848.55	9,274.92	11,752.01	5,137.32
Total cost	1,434,364.34	4,38030.92	296,917.42	586,356.17	22,629.25
Total Revenue	2,031,733.33	694,265.00	395,354.17	685,295.83	27,228.57
Marketing margin (TR-TRC)	633,836.33	265,082.63	107,711.67	110,691.67	9,736.64
Net Farm Income (MM-TFC)	597,368.99	256,234.08	98,436.75	98,939.66	4,599.32
Return on Naira spent (NFI/TC)	0.42	0.58	0.33	0.17	0.20
Benefit Cost Ratio (TR/TC)	1.42	1.58	1.33	1.17	1.20

Source: Data from field survey 2025

Marketing efficiency of oil palm products

The marketing efficiency of palm oil is notably impacted by several factors. Gender (sex) has a significant negative effect (-3.099***), while education and household size also show negative impacts. On the other hand, farm size and access to credit positively influence efficiency, suggesting that larger farm sizes and better financial support improve marketing outcomes. Transportation costs, however, have a strong negative effect (-14.205***), indicating that high

transportation expenses are a major barrier to improving efficiency. The R^2 value of 0.528 means that about 52.8% of the variation in marketing efficiency can be explained by the included factors. For basket marketing, household size (8.569***) and marketing experience (-1.141**) both differently affecting efficiency house old is positive while marketing experience, indicating that Larger households enhance efficiency, while marketing experience may require adaptation to modern practices to maintain effectiveness.

Table 4: Marketing efficiency of oil palm products

Marketing Efficiency	Palm oil	Basket	Broom	Palm kernel oil	Palm wine
Constant	1.823	8.587	-0.105	0.074	-1.181
Sex	-3.099***	4.772**	5.995	1.284	0.452
Age	0.112	-2.662**	5.915*	1.544	6.157***
Education	-5.424	1.462*	-1.929	-0.159	-0.915
Household size	-1.505	8.569***	2.701	6.749**	-3.473
Marketing Experience	-2.982	-1.141	4.971**	2.858*	-1.498*
Ownership of Farm	3.381	-----	-----	-----	-----
Farm size	0.461**	-----	-----	-----	-----
Source of Labour	0.573	8.683**	1.471	-1.410	0.590
Access to credit	2.552	-0.151*	-3.782	-6.441*	-1.213
Extension constant	0.168	-----	-----	-----	-----
Member of co-operative	-1.852	5.167***	-0.260	0.957	0.043
Transportations	-14.205***	-5.563***	1.422	1.696	-8.553**
Rent	6.168	-0.532	2.444	2.444	-0.149
R^2	0.528	0.664	0.506	0.536	0.506
Adjusted R^2	0.504	0.541	0.495	0.484	0.495
F value	7.112	6.439	1.7551	2.380	1.7551

Significant of *1%, Significant of **5%, Significant of *10%
Compute from Field survey Data, 2025**

Age has a significant negative effect (-2.662**), which suggests that older farmers may struggle with marketing efficiency in this sector. Education also shows a positive relationship with efficiency (1.462*), indicating that educated farmers perform better in marketing baskets. Transportation costs again have a negative impact (-5.563***), and the model's R^2 value of 0.664 indicates a strong fit, explaining 66.4% of the variability in marketing efficiency for baskets. In the broom sector, age (5.915*) and marketing experience (4.971**) are positively correlated with marketing efficiency, suggesting that older and more experienced marketers have an edge in this field. Household size also positively influences efficiency (2.701), which could be attributed to the additional support and labor from larger families. However, access to credit negatively impacts efficiency (-3.782), pointing to challenges in securing financial resources for this sector. Rent costs also have a slight negative effect on efficiency. With an R^2 of 0.506, the model explains 50.6% of the variability in marketing efficiency for brooms. Marketing efficiency in palm kernel oil is primarily influenced by age (6.157***) and marketing experience (2.858*), both of which positively affect efficiency. Farmers who are older and more experienced tend to be more efficient in marketing palm kernel oil. Access to credit and rent negatively influence efficiency (-6.441* and -0.149, respectively), which may suggest that the inability to access financial support and high operational costs hinder efficiency. Farm ownership (3.381) also positively influences efficiency. The R^2 value of 0.536 indicates a moderate fit for this model. The marketing efficiency for palm wine is significantly impacted by age (6.157***), showing that older farmers tend to be more efficient. However, transportation costs (-8.553**) have a strong negative impact, suggesting that logistical challenges are a key

issue in improving efficiency in this sector. Marketing experience also shows a slight negative correlation (-1.498*), indicating that less experienced marketers might face difficulties. Rent costs (-0.149) also slightly reduce efficiency.. The model's value R^2 of 0.506 suggests that 50.6% of the variability in marketing efficiency can be explained by the factors included in the analysis for palm wine.

Constraints in Oil Palm Marketing:

Inadequate capital is identified as the most significant constraint, with 83.3% of respondents noting this as a major issue. This constraint affects the ability to expand production, purchase necessary inputs, and improve marketing strategies. The scarcity of products ranks second with 70% of respondents highlighting it as a constraint. Limited product availability often results from inconsistent harvests or poor farm management, further exacerbating the marketing challenges..

A high cost of storage is cited by 65.8% of respondents, ranking third. High storage costs may arise due to inadequate infrastructure or the need for specialized facilities to preserve the quality of the products. Poor access to production credit is noted by 62.5% of respondents as a key constraint, which ranks fourth. This limitation restricts farmers from purchasing inputs like fertilizers, pesticides, and seeds that are necessary for improving productivity. 58.3% of respondents identify poor market information as a significant barrier to effective marketing. This constraint leads to inefficiencies in pricing, lack of knowledge about market trends, and missed opportunities for better profits. Poor access to markets ranks sixth, with 56.7% of respondents experiencing this constraint. Limited transportation networks, inadequate infrastructure, and remoteness from urban centers contribute to poor access to broader markets

Table 5: Constraints to Oil Palm Marketing

CONSTRAINT	FREQUENCY	PERCENTAGE	RANK
Inadequate capital	100	83.3	1 st
Scarcity of products	84	70.0	2 nd
High cost of stores	79	65.8	3 rd
Poor access to production credit	75	62.5	4 th
Poor Market information	70	58.3	5 th
Poor access to Markets	68	56.7	6 th
Labour shortage	58	48.3	7 th
Inadequate of storage facilities	54	45.0	8 th

Compute from Field survey Data, 2025

Labour shortage is another notable constraint, affecting 48.3% of respondents. The availability of labor is crucial for the timely harvesting and processing of palm oil. This issue is worsened by migration trends and the shift of younger generations away from agriculture. Finally,

inadequate storage facilities rank as the least severe constraint, affecting 45% of respondents. Without proper storage infrastructure, farmers face significant challenges in preserving product quality, leading to wastage or marketable losses.

Conclusion

In conclusion, the profitability of oil palm products in Nkuma East Local Government, Enugu State, Nigeria, presents a significant opportunity for economic growth and rural development. The oil palm industry is a key sector contributing to the livelihoods of many farmers and local businesses in the region. With its high demand both locally and internationally, particularly for palm oil, palm kernel, and other derivatives, oil palm cultivation has proven to be a lucrative enterprise. The profitability is contingent upon several factors such as access to quality seedlings, effective farming practices, proper land management, and market access. Smallholder farmers often face challenges related to inadequate funding, poor infrastructure, and fluctuating market prices. To enhance profitability, it is essential to invest in improving these areas, with a focus on modern farming techniques, the establishment of cooperative societies, and access to better financial services.

Recommendations

Based on the findings, the following recommendations were made;

1. Investment in oil palm production and marketing. Farmers and marketers should be sensitized to the benefits of joining cooperative societies. These organizations can help member's access credit, pool resources, and share market information, thereby enhancing their profitability and resilience to market shocks.
2. Upgrading transportation networks, storage facilities, and market centers will reduce marketing costs and post-harvest losses. This will ensure that oil palm products reach markets efficiently, improving overall profitability.
3. Providing subsidies for improved seedlings and mechanized equipment, along with training programs through extension services, will enhance productivity. This will also help farmers achieve better yields and higher-quality products.
4. Establishing local processing industries for oil palm products can increase value addition, creating more income opportunities for producers and marketers. Incentivizing private investment in agro-industries can transform the region into a hub for oil palm processing and export.

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