Evaluation of Palm Oil Market Dynamics in Ogbadibo Local Government Area, Benue State, Nigeria

ABSTRACT

This study examined the analysis of palm oil marketing in Ogbadibo Local Government Area of Benue State, Nigeria. Specifically, the study examined the socio-economic characteristics of the palm oil marketers in the study area; marketing channels; determined the marketing costs and return incurred by palm oil marketers in the study area; determined the factors that affect the marketing of palm oil in the area and to determine the constraints experienced by palm oil marketers in the study area. The research employs a public opinion survey using well-structured questionnaire and interview schedule to achieve the specific objectives. Data were collected from 120 respondents in September, 2024, the peak of palm oil marketing in the study area through the administration of a questionnaire and was analyzed with the use of descriptive statistics such as frequency, and percentages and determined multiple regression. The result showed that palm oil marketing is a women-dominated business as revealed by (82.5%) of the respondents were female. The results also indicated that people from the ages of 31 – 40 are more interested in palm oil marketing as they formed the majority with about 50%. The majority (73.8%) of the marketers were married which showed that there were more married people involved in the marketing of palm oil in Ogbadibo Local Government Area of Benue State. Also, majority (45%) of the marketers have been in the palm oil business for 5 to 10 years. Furthermore, all respondents had formal education. The majority (60%) of palm oil marketers have household sizes of 2– 4 persons, with majority (42.5%%) earning between ₦ 61,000 – ₦ 80,000 as monthly the income of the majority of the marketers. Also, the result showed that on the average, the total variable cost incurred was ₦26, 000 while fixed cost amounted to ₦3, 500, on the return side, the average total revenue amounted to ₦57, 600, the gross margin of the marketers was estimated to be ₦26, 100, the profit of ₦22, 600 while the net return on investment was 0.55% per gallon per day.Result of pricing efficiency ratio of 1.175 and 1.367 for wholesalers and retailers respectively, indicated that wholesalers and retailers quoted prices were under efficient implying that few of them were running the business at a loss.The major constraints affecting palm oil marketers were high cost of transportation, lack of access to credit facilities, substitution by other products among others. The study concluded that palm oil marketing was profitable and solvent with a return on investment of 0.55% and a profit of ₦22, 600 per gallon per day or (1 gallon =3.7854 liters). The study recommends that there should be an improvement in the transportation system to reduce the high cost of palm oil transportation.

Keywords: Marketing, constraints, palm 0il, marketing margins, Benue State

1. INTRODUCTION

"Palm oil is the major agricultural commodity export of Nigeria in terms of foreign exchange earnings. Although its contribution to the total natural exports earnings during the past two decades propped considerably due to the enormity of foreign exchange earnings of crude petroleum. The importance of palm oil production and marketing in Nigeria agricultural sector becomes clearer when one realizes its substantial contribution to the Gross Domestic Product (GDP) and its supply for both domestic and industrial uses (Onojieruo, 2024). Palm oil is extracted from the pericarp or outer beneath outer skin of the nut from the oil palm, (*Elaeisguineesis*) colored red due to high content of alpha carotene (24mg per 100g) and beta-carotene (30mg) together with about 60mg of 5-12% polyunsaturated fatty acids, and linoleic acid" (Anyaoha and Zhang., 2022).

According to United States Department of Agriculture (2022), "world production of palm oil has increased tremendously during the last 30 years as a result of the rapid expansion of oil palm planting in Southeast

Asian countries, spearheaded by Malaysia and Indonesia. He further reiterated that it is thus, by far, the most widely produced tropical oil and constitutes thirty per cent (30%) of the total edible oil production worldwide. He also reported that in Nigeria, 80% of production comes from dispersed smallholders who harvest semi-wild plants and use manual processing techniques. Two kinds of oil are obtained from the oil palm; red palm oil extracted from the fibrous layer and palm kernel oil which is obtained from the kernel beneath the fibrous layer of the fruit. Palm oil has a special feature which is its color that varies from orange-yellow to red to a fat-soluble carotenoid which is responsible for the vitamin A content of palm oil. Processing the oil palm fruit into palm oil was done by harvesting the fruit from the brunch and then processed into palm oil by women, through a time-consuming and labor-intensive process involving repetitively boiling and filtering the fresh fruits with water, similar methods are still largely used throughout West Africa" (Anyaoha and Zhang, 2022; Worlu et al. 2023).

According to Okolo *et al.* (2019), "in most African countries including Nigeria palm oil grows naturally in the rainforest zones where annual rainfall is between 125- 660 centimeters and annual temperature ranges from 20-34°c. Palm oil is the world's second-largest major vegetable oil after soya bean it is not only used as a domestically edible oil it is also used for the production of varieties of products like soaps, margarine and several others. This indicates that there is a high demand for the products and consequently need to increase production. Palm oil marketing is concerned with all stages of operation that aid the movement of the produce from the producer to the final consumer. These include: assemblage, storage, transportation, grading and financing. Marketing of palm oil in Nigeria takes place in homes, roadsides, local/periodic market centers and stalls. These can be both wholesale and retail types in both rural and urban centers. Generally, palm oil is transported from the supply regions of Southern Nigeria to the demand regions of Northern Nigeria".

According to Umaru *et al*. (2018), in Benue State, the marketing of palm oil takes the traditional but efficient systems. It follows in place in the home of producers, by the roadside and in the local market center. These areas serve as channels of distribution of palm oil. The local market centers are of three kinds, classified according to their functions in respect to palm oil distribution. These are the market places found in most of' the villages in the producing areas. Palm oil is sold in cans, drums and retail market where palm oil is sold in bottles and tins. Palm oil is sold either in wholesale or retail markets. Transaction takes place side by side. The only justification for this classification is that a greater volume of oil is sold at wholesale than at retail. However, the seller may handle both wholesale and retail marketing. The export-orientated nature of palm oil aids many producers to become monopolies.

"Several factors affects the efficient marketing of palm oil and they need to be addressed because the potential of the sector is too enormous to be overlooked. One of the functions of agricultural marketing is to bring items of trade from surplus to deficit areas" (Joshua, 2015). Therefore, it is important to examine the marketing of palm oil in Ogbadibo Local Government Area, of Rivers State, the specific objectives were to: (i) examine the socio-economic characteristics of palm oil marketers in the study area, (ii) describe the marketing channels of palm oil in the study area,(iii) determine the marketing cost and return

incurred by palm oil marketers in the study area,(iv) ascertain the determinants of wholesale and retail selling prices of palm oil in the study area,(v) determine the pricing efficiency levels in palm oil marketing, and (vi) ascertain the factors that affect the marketing of Palm oil.

2. MATERIALS AND METHODS

2.1 Research Design

The study employed a public opinion survey using structured questionnaire and interview schedules to achieve the specific objectives.

2.2 The Study Area

The study was carried out in Ogbadibo Local Government Area of Benue State, Nigeria. The choice of this local government for this study stemmed from the fact that Ogbadibo is one of the local government areas that is noted for palm oil production and marketing in Benue State. The local government shares boundaries with Olamaboro Local Government Area of Kogi State to the North, on the East by Udenu Local Government Area, on the South by Isi-Uzo local government area both of Enugu State and on the West by Okpokwu local government area of Benue State.

The Local Government Area is located between latitude 6^0 20 and 9^0 10N and longitude 6^0 40 and 7^0 40 E with estimated landmass area of 820km^2 and a projected population of three hundred and sixty-five thousand (465,102) people (NPC, 2022). The annual temperature is about 27^0C with an annual rainfall of 1500-1800 millimeters. The Local Government comprises three districts namely: Orokam, Otukpa and Owukpa with 13 council wards. The major crops produced in the area include rice, maize, yam, soybeans, sorghum, vegetables among others. Also, economic tree crops such as oil palm, citrus, mango, and cashew are also grown.

LEGEND

Major Districts in Ogbadigbo

Neighbouring Towns/Communities

Figure 1: Map of Ogbadigbo Local Government Area, Benue State, Nigeria.

2.3 Sampling Procedure and Sample Size

Multistage sampling was used. In the first stage, Ogbadibo Local Government Area was purposively chosen because it greatly benefits the production of palm oil. In the second stage, three (3) major districtsof the six (6) districts were purposively chosen from the local government based on intensity of Palm oil marketing which were Orokam, Otukpa and Owukpa. The third and final stage involved the random selection of 120 respondents (i.e. twenty (20) palm oil wholesalers and twenty (20) retailers from each of the selected districts.A well-structured questionnaire as research instrument was used to elicit information from the respondents.

2.4 Analytical Techniques

Both descriptive and inferential statistics were employed in the study. Descriptive statistics such as frequency, means and percentages was used to describe socio-economic characteristics of the respondents and pricing efficiency of wholesale and retail palm oil marketing. Gross margin (GM) was used to evaluate marketing costs and return incurred by palm oil marketers.Regression model was used to ascertain the determinants of wholesale and retail selling prices. Three functional forms, linear, double-log and semi-log were tried and the equation with the best fit will be chosen as the lead equation for further analysis.

2.5 Model Specification

2.5.1 The regression model

The model was implicitly expressed as follows:

$Qi=f(X_1\ldots\ldots\ldots\ldots\ldots\ldots X_8)$ …… (1)

$Qi=b_o+b_1X_1+b_2X_2\ldots\ldots\ldots b_8X_8+e_i$ ……..(2)

Where:

Qi is the dependent variable, b_o is constant/intercept, b_1-b_8 are coefficients of the independent variables. $X_1\ldots\ldots\ldots X_8$ are independent variables and e_i is the error term.

2.5.2 Marketing cost

The marketing cost was estimated using the formula:

MC= QM (CL+CT+RS+TX)…… …… (3)

Where:

MC= Marketing cost (₦)

QM= Quantity of commodity marketed (Gallons)

CL=Rate of loading/transportation(₦)

RS= Cost of storage (₦)

TX= Tax (₦)

2.5.3 Gross margin analysis

This model is used to determine cost and returns, it is mathematically stated as:

GM=TR—TVC…….. (4)

Where:

GM=Gross Margin (₦)

TR=Total Revenue (₦)

TVC=Total Variable Cost (₦)

TFC= Total fixed cost.

Marketing channels was described based on the data to be collected from the respondents such as the wholesalers and retailers and consumers respectively to describe the marketing channels palm oil trade in the study area.

2.5.4 Measurement of Variables

Qi=Quantity of palm oil supplies (liters)

X_1=Price per unit sold (Naira)

X_2=Price of other substitutes (Naira)

X_3=Cost of transportation (Naira)

X_4=Equipment cost of marketing (Naira)

X_5=Age of household head (Years)

X_6=Educational level of household head (Years)

X_7=Sex (male=0, female=1)

X_8=Marital status1 (married=0, single=1)

3. RESULTS AND DISCUSSION

3.1 Socio-economic Characteristics of Palm Oil Marketers in the Study Area

Theresults in Table 1 showed that more females are invested in palm oil marketing than their male counterparts. Specifically, 88.3% of the total respondents were females while 11.7% were males. This showed that the palm oil marketing business involves more females than males. A plausible explanation is that females typically handle the processing and smaller-scale selling stages of the palm oil value chain, which are considered more accessible and manageable within their domestic roles, particularly in rural areas where most palm oil production occurs.This agrees with the findings of Sarku (2019) that when it comes to palm fruit processing and marketing, women predominate. Also, this result agreed with that of Okidim*et al.* (2019) who found out that “the majority of palm oil marketers were females. More so, the findings of the study revealed that half (50%) of the respondents were within the ages of 31-40 years and this implies that people involving in palm oil marketing are mostly young with enough strength and capacity to meets their daily needs and household food security.The majority (65.8%) of the palm oil marketers were married with household size of 2-4 persons implying that palm oil marketing is more attractive to married people, so as to improve income, maximize resource use efficiency and also ensure their household’s welfare and well-being. The implication is that, the more the household size increases, the more the quest to generate money to take care of the home through marketing of palm oil in the study area”. This result supported Nse-Nelson *et al*. (2021) which stated that the household size of palm oil marketers is moderate.

Results on educational level showed that all the respondents (100%) had one form of formal education or the other with majority (44.2%) attaining primary education.This is in line with the finding of Nse-Nelson *et al.* (2021) where they discovered that the majority of the palm marketers acquired formal education and

thiswill enhance their marketing performance and efficiency. Most of the respondents had the experience of about 5- 10 years. This result implies that marketers had a good experience in palm oil marketing. This is in agreement with a study carried out by (Nse-Nelson et al. 2021) who stated that the experience of marketers is a major factor in the profitability of palm oil marketing.About 46.7% of the respondents have been in palm oil marketing business for more than 10 years and hence it is obvious that the respondents have enough experience that will enable them to efficiently allocate resources for optimum marketing output. The result further showed that majority (42.5%) of the respondents have ₦61, 000 – ₦80, 000 as monthly incomefrom palm oil marketing.The implication of this result is that the income level of marketers significantly affects the number of participation in palm oil, the more the income level the more the participation. This study is in line with the recommendation of (Nse-Nelson et al. 2021) who recommended that palm oil marketers should form a cooperative body to take advantage of economies of scale.

Table 1: Socio-economic Characteristics of Palm Oil Marketers in the Study Area

Variables	Frequency	Percentage	Cumulative (%)
Sex			
Male	14	11.7	11.7
Female	106	88.3	**100.0**
Age (years)			
22-30	13	10.8	10.8
31-40	60	50.0	60.8
41-50	44	36.7	97.5
51-56	3	2.5	**100.0**
Marital status			
Single	5	4.2	4.2
Married	79	65.8	70.0
Divorced	7	5.8	75.8
Widowed	29	24.2	**100.0**
Household size (number)	68	56.7	56.7
2-4	51	42.5	99.2
5-7	1	0.8	**100.0**
8-10			
Educational level			
Primary	53	44.2	44.2
Secondary	48	40.0	84.2
Tertiary	19	15.8	**100.0**
Marketing experience (years)			
< 5	52	43.3	43.3
5-10	56	46.7	90.0
11-15	8	6.7	96.7
16-20	4	3.3	**100.0**
Monthly income (₦)			
20,000-40,000	5	4.2	4.2
41,000-60,000	8	6.7	10.9
61,000-80,000	51	42.5	53.4
81,000-100,000	40	33.3	86.7

121,000-140,000	13	10.8	97.5
Above 141,000	3	2.5	**100.0**

Source: Author's Computation, 2024.

3.2 Marketing Channels of Palm Oil Marketing in the Study Area

The channels of palm oil marketing in the survey area is depicted in chart as shown. According to the responses of the respondents, sixty per cent (71%) of marketers get palm oil from the producer side. These are wholesalers who sell to retailers and retailers sell to the consumers, while (29%) purchase from the producer and then retail to the consumer. The marketing channel used majorly by marketers is from the producer to the wholesaler to the retailer and to the final consumer. This study agreed with the observation of Basset*et al.* (2015) which stated that the majority use the first channel of marketing and a 4-level distribution with 3-level traders.

Table 2: Percentage Distribution of Palm Oil Marketing Channels in the Study Area (n=120)

Channels	Frequency	Percentage
Producer → Wholesaler → Retailer → Consumer	85	71
Producer → Retailer → Consumer	35	29
Total	**120**	**100**

Source: Author's Computation, 2024.

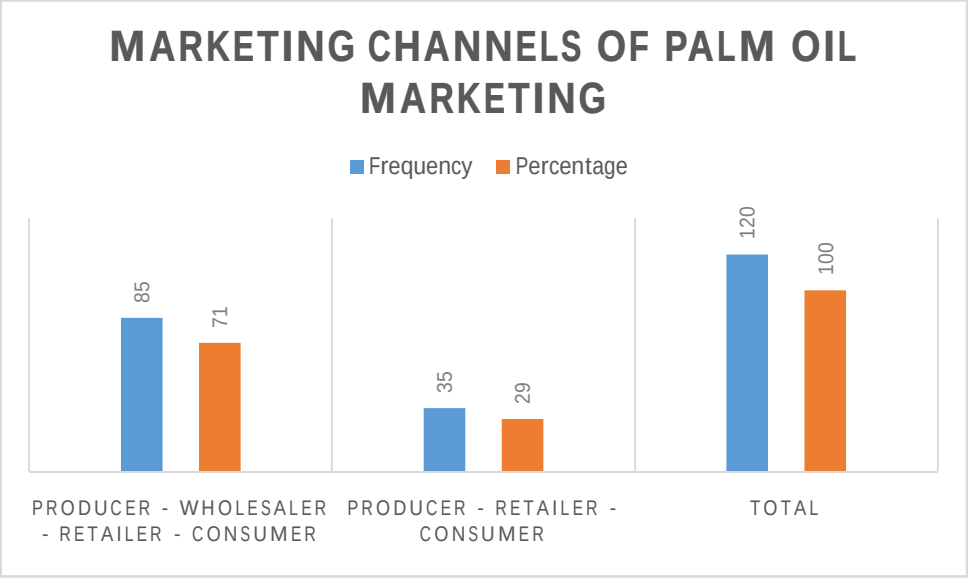

Figure 2: Percentage Distribution of Palm Oil MarketingChannels in the Study Area

3.3 Determinants of Selling Prices in Wholesale of Palm Oil in the Study Area

The multiple regression analysis was used to examine the determinants of wholesale selling prices of palm oil in the study area. The independent variables in the model appear to explain roughly 73% of the variations in wholesale selling prices as indicated by the R^2 of 0.73. The F-statistic (6.322) confirms the suitability of the overall regression equation. The result in Table 3 indicated that the wholesale selling price of palm oil in the study area is influenced only two variables, (X_1 and X_2). The quantity of palm oil (X_1) purchased by wholesalers was negatively related to the wholesale selling price and significant at (P= 0.05)The possible explanation is that the higher the quantity of palm oil purchased by wholesalers, the lesser are their selling prices and this might be attributed to the fact that bulk buying attracts discounts which invariably reduce cost per unit and therefore give the sellers the opportunity at selling at reduced price. Consequently, it facilitates high rate of turnover and more profit. This results is in conformity with the findings of Omosehin*et al.* (2022).Thepurchase price (X_2) was found to be positively related to wholesale selling price and this was significant at (P= 0.01).The higher the purchasing price, the higher the wholesale selling price.Theremaining variables did not exhibit statistical significance.

Table 3: Determinants of Wholesale Selling Price of Palm Oil in the Study Area

Variables	Coefficients	Standard errors
β_o (Constant)	4.095***	0.503
X_1 (Quantity purchased)	0.040**	0.019
X_2 (Purchase price)	0.269*	0.079
X_3 (Transportation cost)	0.026	0.018
X_4 (Storage cost)	0.014	0.109
R^2	0.73	
Adjusted R^2	0.72	
F- value	6.332**	

***= Significant at 1%, ***= Significant at 5%; and *= Significant at 10%

Source: Author's Computation, 2024.

3.4 Determinants of retail Selling Prices of Palm Oil in the Study Area

On determinants of retail selling price (**Table 4**), the analysis revealed that transportation cost and purchased price were positively correlated with the retail selling price and was significant at (P= 0.01). Storage cost was also positively correlated with retail selling price but was significant at (P= 0.05) However, the quantity purchased by retailers from wholesalers was negatively related to retail selling price but was significant at (P= 0.01). The explanation of the findings is that, the higher any one of these marketing factors (transportation and storage cost), the higher will be the retail selling price of palm oil while the higher the quantity purchased by the retailer, the lesser its selling price with respect to reduction in price paid to wholesalers. The regression result showed that the variables used in predicting retail

selling price of palm oil in the study area accounted for 68% of the prediction with F-value statistically significant at (P= 0.01).

Table 4: Determinants of Retail Selling Price of Palm Oil in the Study Area

Variables	Coefficients	Standard errors
β_o (Constant)	2.140**	0.944
X_1 (Quantity purchased)	0.243***	0.072
X_2 (Purchase price)	0.531***	0.150
X_3 (Transportation cost)	0.273**	0.063
X_4 (Storage cost)	0.028	0.012
R^2	0.68	
Adjusted R^2	0.62	
F- value	16.961***	

***= Significant at 1%, ***= Significant at 5%; and *= Significant at 10%

Source: Author's Computation, 2024.

3.5 Marketing Costs and Return of Palm Oil Marketing in the Study Area

Table 5 shows the marketing costs and returns in palm oil marketing. The analysis of costs and returns of palm oil marketing showed that the total variable cost incurred was ₦31, 500 while fixed cost amounted to ₦3, 500. Similarly, on the return side, the average total revenue amounted to ₦57, 600. The profit was ₦22, 600 while the net return on investment was 0.55% per gallon per day and they sell an average of 2-4 gallons per day. The return on investment of 0.55% obtained in this study is higher than that obtained by Nse-Nelson *et al.* (2021) which obtained a return on investment of 0.16.The marketing costs and revenue from the result showed that palm oil marketing is a profitable venture with a lower fixed cost. This result agreed with Simpa and Nmadu (2015) who revealed that palm oil marketing was highly profitable having a lower fixed cost.

Table 5: Average Marketing Costs and Return Analysis of Palm Oil Marketing in Naira/Gallon /day

Item	Amount (₦)
Total Revenue (TR)	**57600**
Buying price	25200
Cost of packaging materials	1500
Transportation cost	2000
Labor cost	1800
Tax	1000
Total Variable Cost	**31500**
Fixed Cost	
Rent	500
Cost of furniture	1000
Bottles/gallons/others	2000
Total Fixed Cost	**3500**

Total cost	**35000**
Profit (TR-TC)	**22600**
Rate of return on investment (TVC/TR)	0.55%

Note: 1 Gallon = 3.7854 Liters
Current price of 1 liter of palm oil =₦1, 700
Source: Author's Computation, 2024

3.6 Pricing Efficiency of Wholesale and Retail Palm Oil Marketing

The results in **Table 6** showed the pricing efficiency of wholesalers and retailers of palm oil marketing in the study area. The results showed that the retail average selling price of palm oil per liter was ₦855.20 while its cost per liter was found to be ₦625.60 and the pricing efficiency ratio was found to be greater than 1 (i.e. 1.367). In respect to wholesale price efficiency, the average wholesale selling price per liter was ₦629.40 and palm oil cost per liter was ₦535.80. The pricing efficiency ratio was also, found to be greater than 1 (i.e. 1.175). Therefore, it could be concluded that retail palm oil marketing price was under efficient as the marketers are running business at a loss. The positive price spread presents the feature of market imperfections and inefficiency. This findings agrees with that of Ugwu*et al.* (2019) and Agbamu (2015) who observed that imperfections in the marketing system result in price differentials greater than zero. This results strongly suggest that the efficiency ratio differences between the retailers and wholesalers did not result from planned manipulation under monopolistic conditions. It is rather a result of imperfection inherent in the market system which is due to certain characteristics of ineffective information which leads to lack of concentration in supply (Muneer and Pathak, 2024).

Table 6: Pricing Efficiency of Palm Oil Marketing in the Study Area

Marketers	Average Price/Liter	Average Cost/Liter	Efficiency ratio
Retailers	855.20	625.60	1.367
Wholesalers	629.40	535.80	1.175

Source: Author's Computation, 2024.

3.7 Factors Affecting Palm Oil Marketing in the Study Area

Table 7 presents the result of 4-point-liket scale was used to show the problems faced by palm oil marketers in the study area. All 10 items were agreed by the respondents (having had a mean score greater than the criterion mean score which is 2.50) indicating that these items were factors facing palm oil marketing in the study area. The result showed that high transportation cost ($\bar{x}$ = 4.28)ranked irst in palm oil marketing.This findings is in line with (Ekine*et al*., 2016), who reported poor transportation systems and inadequate credit facilities as the major problem of palm oil marketing. The problem of lack of access to credit facilities ($\bar{x}$ = 4.20) was ranked second.Similarly, the problem of poor market information about prices ($\bar{x}$ = 4.18) was ranked third while the problem of substitution with other oil($\bar{x}$ = 4.08) was ranked fourth. Other major constraints werecompetition($\bar{x}$ = 3.81), unfavorable government policy ($\bar{x}$ = 3.70), low patronage ($\bar{x}$ = 3.68), lack of standard measurement ($\bar{x}$ = 3.31),and poor quality of

products($\bar{x}$ = 3.29). Although,finding revealed that production cost of palm oil was also perceived as a challenge in palm oil marketing in the study area but was not considered as a major challenge.

Table 7:Factors Affecting Palm Oil Marketing in the Study area (n =120)

Factors	Weighted sum	Weighted mean	Rank	Remark
Lack of access to credit facilities	504	4.20	2nd	PC
Transportation cost	513	4.28	1st	PC
Unfavorable government policy	444	3.70	6th	PC
Low patronage	442	3.68	7th	PC
Production cost	280	2.33	10th	NC
Substitution by other oil	490	4.08	4th	PC
Poor market price information	501	4.18	3rd	PC
Competition	457	3.81	5th	PC
Poor quality of product	395	3.29	9th	PC
Lack of standard measurement	397	3.31	8th	PC

Source: Authors' Computation, 2024

*** =** Challenges with Mean score ≥2.50 are considered more serious

* PC= Perceived Challenge NC= Not a Challenge

4. CONCLUSION AND RECOMMENDATIONS

The study have shown that women generally invested more in palm oil marketing than the men in the study area probably because females typically handle the processing and smaller-scale selling stages of the palm oil value chain, which are considered more accessible and manageable within their domestic roles, particularly in rural areas where most palm oil production occurs.The study showed despite the constraints encountered by the marketers, Ogbadibo Local Government Area of Benue State, the palm oil marketing in the area is a profitable venture with a rate of return on investment of 0.55% and profit of ₦22, 600 per gallon per day and arate of return on investment of 0.55%. However, despite the viability of the business, the study found that wholesalers and retailers quoted prices were still under- efficient implying that few of them were running the business at a loss.The result showed that high transportation cost($\bar{x}$ = 4.28), lack of access to credit facilities ($\bar{x}$ = 4.20), poor market information about prices ($\bar{x}$ = 4.18), substitution with other oil($\bar{x}$ = 4.08),market competition($\bar{x}$ = 3.81), unfavorable government policy ($\bar{x}$ = 3.70), low patronage ($\bar{x}$ = 3.68), lack of standard measurement ($\bar{x}$ = 3.31), and poor quality of products($\bar{x}$ = 3.29) were major problems of palm oil marketing in the study area. Although, finding revealed that production cost of palm oil was also perceived as a challenge in palm oil marketing in the

study area but was not considered as a major challenge.Based on the findings of this study, the following recommendations were made:

i. Governmental and Non-governmental Organizations should provide adequate credit facilities for palm oil marketers (retailers and wholesalers) to enhance their purchasing power and increase their supply to meet demand at affordable price
ii. Government should provide adequate transportation for the palm oil marketers to reduce transportation cost and hence reduce cost borne by final consumers
iii. Provision of adequate storage facilities to minimize product spoilage and quality.
iv. More supply of palm oil should be encouraged to bridge the gap between supply and demand of the commodity thereby reducing the purchase price.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declares that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during writing or editing of this manuscript.

REFERENCES

Agbamu, J. U. (2015). Analysis of Gender Roles in Palm Oil Production in the Northern Agricultural Zone of Delta State, Nigeria. *Asian Journal of Agricultural Extension, Economics & Sociology*, *8*(4), 1–8. https://doi.org/10.9734/AJAEES/2016/19613

Anyaoha, K.E. and Zhang, L. (2022). Technology-based comparative life cycle assessment for palm oil industry: the case of Nigeria. Environment, Development and Sustainability, https://doi.org/10.1007/s10668-022-02215-8

Basset, N.E., Uwemedimo, E.O., Umen, U.I. and Edet,N.E. (2015).Analysis of the Determinant of fresh fish marketing and profitability among captured fish traders in South-South Nigeria: The case study of Akwa- Ibom State. *British Journal of Economics, Management and Trade, 5(1): 35-45.*

Ekine, D.I., Oni, M.E. and Unaeze, H.C. (2016). Marketing of Palm Oil in Ikwerre and Etch Local Government Areas of Rivers State, Nigeria. *Journal of Agriculture and Social Research, 6(1): 48-55*

Joshua, H. (2015). Analysis of Cowpea Marketing and Price Trends in Some Selected Urban and Rural Markets in Kaduna State, Nigeria. Unpublished M.Sc. Thesis, Department of Agricultural Economics and Rural Sociology, Ahmadu Bello University Zaria, Kaduna State Nigeria.

Muneer, S., & Pathak, H. (2024). Oil Palm in India: Market Arrivals and Price Movements. *Journal of ExperimentalAgricultureInternational*,*46*(8), 116–124. https://doi.org/10.9734/jeai/2024/v46i82683

National Population Commission, (NPC, 2022). Projected National Population Census Report, Abuja.

Nse-Nelson, F.A., Mejeha, R.O. and Oke, U.R. (2021). Performance and profitability of Palm Oil wholesale Marketing in Abia State, Nigeria. *Nigerian Agricultural Journal, 52(1): 38-44.*

Okidim, I.A.,Herman,G.I. and Obe-nwaka, M.O.(2019). Palm oil Marketing and Financing in Oyigbo Local Government Area of Rivers State in Nigeria. *International Journal of Agricultural Economics and Rural Development, 10(1): 36-42*

Okolo, C. C., Okolo, E. C., Nnadi, A. L., Obikweli, F. E., Obalum, S. E. and Igwe, C. A. (2019). The Oil Palm (*Elaeisguineensis*): nature's ecological endowment to Eastern Nigeria. *Agro-Science*, *18(3): 48-*57 DOI: https://dx.doi.org/10.4314/as.v18i3.9

Omosehin, O., Oseni, J., Olutumise, A., and Osabuohien, E. (2022). Palm oil price fluctuations and welfare in Nigeria. In: Osabuohien, E., Odularu, G., Ufua, D., Osabuohien, R, (editors). COVIS-19 in the African development and socioeconomic shocks. Leeds. Emerald Publishing Limited. Pg.169-182.

Onojieruo, F. I. (2024). Evaluating the Palm Oil Industry in Nigeria. *International Journal of Entrepreneurship and Business Innovation, 7(3): 29-42.*

Sarku, R. (2019). Analysis of gender roles in the oil palm industry in Kwaebibirem district, Ghana. *International Journal of Humanity and Social Sciences, 6(3): 187-198*.

Simpa, O.J. and Nmadu, J.N. (2015). Profitability of Small Scale Yam Farms in Kogi State, Nigeria. *Journal of Applied Agricultural Research, 6(2): 95-100.*

Ugwu, N. M., Oteh, O. U., and Amama, G. O. (2019). Gender Differentials in Profits among Palm Oil Processors in Abia State, Nigeria. Journal of Gender, Agriculture and Food Security, 2(2): 23-32.

Umaru, D. A., Loko, I., and Okpanachi, F. O. (2018). Economic Returns and Smallholder Participation in Palm Oil Enterprise in Ado Local Government Area of Benue State, Nigeria. *International Journal of Management Sciences and Business Research, 7(2): 31-35.*

United States Development of Agriculture (2022). Nigeria palm oil production by Year (1000MT) https://www.indexmundi.com/agriculture??country=ng&commodity=palm-oil&graph=production

Worlu, A. A., Morris, R. E., &Nyejiwu, I. T. (2023). Analysis of Palm Oil Marketing in Ikwerre Local Government Area, Rivers State. Nigeria Agricultural Journal, 54(1), 493-499.