

Economic Viability of Palm Kernel Oil Processing in Ahoada East LGA, Rivers State, Nigeria

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Abstract: *This research looked at the economics of palm kernel oil processing in Rivers State's Ahoada East Local Government Area. The work precisely characterized the socioeconomic traits of processors of palm kernel oil, assessed the processing costs, identified the issues facing processors of palm oil and indicated the causes of the palm kernel oil enterprise's dropping production. Seven villages were purposefully chosen from each of the three clans for a total of twenty-one villages; twenty communities were proportionally chosen from the three clans. Additionally, three palm kernel oil producers were chosen at random from each village, yielding a total of 63 respondents for the study. The data were examined using descriptive statistics and gross margin analysis. According to the data, there were primarily female respondents (70.0%) and male respondents (30.0%), whose active ages ranged from 41 to 50 years. Compared to singles, divorcees, and widows, married people (60.0%) were more active. The average respondent's household size is between 1 and 5, their educational background is 40.0%, and their years of experience are between 1 and 5. The gross margin was N96,700 and the profit were N77,700 per month. Palm kernel oil sales brought in a total of N328,000, with a total expense of N250,300. The main difficulties experienced by the research area's respondents are the high transportation costs for obtaining the raw materials, the expensive palm kernel fruit, the poor road that led to the expensive palm kernel seed, the scarcity of palm kernel fruit, the high cost of hiring equipment for the process of making palm oil, and the lack of access to credit facilities. In conclusion, the study's findings demonstrate Ahoada East Local Government Area, Rivers State, palm kernel oil processors were lucrative. According to the report, the government could expand road building into rural areas by repairing feeder roads, which will improve traffic issues.*

Keywords: Economics, Palm kernel oil, processing, Ahoada East

1. Introduction

In Nigeria, the growth of palm kernel oil has been sluggish. This is due to the fact that in Nigeria, as opposed to Indonesia and Malaysia, where production is based on massive monoculture, smallholders who are dispersed and gather plants that are somewhat wild and processed by hand methods account for 80% of production (World Rainforest Movement (WRM), 2001). Palm kernel oil has been produced in the nation thanks to a ready supply of inexpensive labour (Corley et al., 2016). To preserve profitability, it is anticipated that labour costs will increase in the future. Those that process palm kernel oil will need to raise the price at which they sell oil, boost yields by a commensurate amount, or cut their labour costs by working less laboriously.

Palm kernel oil is produced from the fruit of the palm tree (*Elaeisguineensis*). The West African tropical rainforest is where the palm kernel tree first appeared. According to the Food and Agriculture Organization (FAO) (2015) and Rahman (2018), The main belt crosses Cameroon, Cote d'Ivoire, Ghana, Liberia, Sierra Leone, Togo, and Congo in the southern hemisphere. They claim that Southeast Asia, the West Coast of Africa, and Latin America are the key production regions. The palm kernel oil tree, which originated in the coastal plain of Nigeria and then spread inland as a reliable crop, is present in both wild groves and plantations in that country (Carrere, 2011). He emphasized once more that millions of Nigerians depend on palm kernel oil for their daily lives.

For thousands of years, Africans have processed palm kernel oil for edible cream; the resulting palm kernel oil is vibrantly coloured and a staple of much traditional West African food (FAO, 2015). According to the paper, the conventional processing procedure is straightforward but laborious and ineffective. The farmer either processes palm kernel oil themselves using the old-fashioned oil extraction technique or sell it to other processors. Among the producers, conventional or somewhat automated technologies are primarily used to refine palm kernel oil (Omereji, 2015). Saturated fatty acid palmitic makes up most of the glycerides in palm kernel oil, giving it its deep colour. Carotenoids are pigments present in both plants and animals (FAO, 2015). When combined with kerosene, palm kernel oil can be used as a wood polish or as a laxative. The leftover palm kernel cake makes a superior animal feed after oil extraction.

The Nigerian people have relied on palm kernel oil for centuries and will continue to do so. Domestic and industrial consumption will keep rising due to the world's expanding population (Omereji, 2015). According to Vogel (2002), there is a sizable local demand for palm kernel oil; it is anticipated that for every five Nigerians, at least half a litre of palm kernel oil is consumed each month, largely for the treatment of children. There are many uses for palm kernel oil, but the production of dietary fats, cream, greases and lubricants, internal combustion engine fuel, and tin coating for iron sheets are its principal applications (Armstrong, 2018; Rahman, 2018). They claim that palm kernel oil is most beneficial to the margarine business, primarily because of its preservation properties. Since 1974, Nigeria has stopped contributing to the export trade in the commodity,

mostly because of the rising domestic demand for palm output. Prior to 1965, Nigeria was the world's biggest producer and exporter of palm kernel oil (Omoti, 2014). He claims that since that time, industry growth has not kept up with rising domestic demand, making it impossible for the nation to once again participate in international trade. In third-world nations, palm kernel oil has a significant economic value. Thousands of villages that might not otherwise have employment opportunities now have jobs (Armstrong, 2018).

One of the main sources of income for the rural residents of Rivers State's Ahoada East Local Government Areas is palm kernel oil processing. Palm bunches are trimmed, moved, loaded, and carried away for processing. Some of the processes involved in converting the palm kernel to palm kernel oil include unloading, stripping, sterilizing, breaking, and oil extraction. Among the most challenging steps in Nigeria's traditional palm kernel oil manufacturing is turning palm bunches into palm kernel oil (Omereji, 2015). Different people process the palm tree's fresh fruit bunches kernel, and each processing technique results in the production of palm kernel oil, palm kernel, and maybe palm kernel oil.

Objectives of the Study

This study aimed to ascertain the economics of palm oil processing in Rivers State's Ahoada East Local Government Area. The specific objectives of the study are to learn more about the socioeconomic traits of Ahoada East Local Government Area, Rivers State's palm kernel oil processors; the profit margin made from processing palm oil in Rivers State's Ahoada East Local Government; and the profitability of Production of palm kernel oil and issues with palm kernel oil processors.

2. Methodology

Area of the Study

The Ahoada East Local Government Area of Rivers State served as the study's location. which is located Northwest of Port Harcourt City. The major occupations of the people are farming, fishing, and trading. Other means of livelihood include hunting, palm kernel oil milling, building and weaving (Ariye, 2006).

The population of the Study

The study population included all palm kernel oil processors (male and female), from Upata, Akoh and Igbu-Ahoada all in the Ahoada East Local Government Area of Rivers State.

Techniques for Sampling and Sample Size

A multi-stage sampling method was employed to gather the sixty-three (63) participants needed for the study. At stage I, three clans (Upata, Akoh and Igbu-Ahoada) were purposively selected because they are engaged in palm kernel oil processing in commercial quantity. At stage ii, seven villages were purposely drawn from each clan to get twenty-one villages. At stage iii, three persons were selected randomly from the twenty-one villages to arrive at sixty-three respondents used for the study.

3. Results and Discussion

Social and Economic Traits of the Palm Kernel Oil Processing in Ahoada East LGA

Table 4.1 shows that 70% of processors (respondents) were females and 30% were males in the study area which suggested that the region's palm kernel oil production was dominated by women. The local use of this commodity, particularly by women and children, may be the cause of the female domination of palm kernel oil production. This result differs from those of Wilcox and Tasie (2018), who found that in the Ikwerre Local Government Area, 62.5 percent of workers were men and 37.5 percent of workers were women, and from Ajayi and Solomon (2010), who found that in the oil palm processing industry, 74 percent of workers were men and 26 percent of workers were women. Adults in the region who were between the ages of 41 and 50 predominated in palm kernel oil processing, demonstrating that those over middle age perform palm kernel oil processing the bulk of the time. Other ranges were between 20-30 years (10%) and 31-40years (40%). The marital status of the respondents on the table1 indicated that 60.0% were married, 10% were single, 5% were divorced and 25% were widowed respondentsrevealing that the majority of the respondents are family people who were either previously married or still married. Because the size of a home affects labour costs and processing costs, 60% of respondents had households with 1 to 5 people, 20% were between 6-10 persons, 15% were between 11-15 persons and 5% were between 16-20 persons respectively. In terms of formal education, 15% of respondents had no formal education, 15% had primary education, 40% had secondary education, and 30% had tertiary education, correspondingly. This degree of knowledge can improve the technology-based processing of palm kernel oil.

The Gross Margin and Profitability of Processing Palm Kernel Oil in Ahoada East Local Government, Rivers State

Table 2, shows that the estimated total variable cost (TVC) was ₦231,300 and total revenue (TR) was ₦328,000,the total fixed cost (TFC) was ₦19,000 and the total cost (TC) was ₦250,300. The gross margin (GM) was ₦96,700.00 with a profit of ₦77,700. The analysis indicated that the study area's palm kernel oil processing business was profitable. This result is in agreement with the findings of Uche et al. (2017) and Wilcox and Tasie (2018) respectively, that worked on the economics of smallholder oil palm farmers' production of palm oil in Emohua local government area of Rivers State, Nigeria, and the economic analysis of palm oil processing inIkwerre and Etche local government areas of Rivers State, Nigeria.

Table 2: Gross Margin and Profitability of Palm Kernel Oil Processing in Ahoada East L. G. A.

S/N	Items	Amount (₦)
1	Revenue from sales	328,000.00
2	Variable cost	
	Purchase cost	206,500.00
	Off-loading	4,100.00
	Transportation	7,600.00
	Cracking of PK	13,100.00
	Total variable cost	231,300.00
	Gross Margin	96,700.00

3	Fixed cost	
	Storage rent	4,000.00
	Drum	15,000.00
	Total fixed cost	19,000.00
	Total cost	250,300.00
	Profit	77,700.00

Source: Field survey data, 2022

Revenue from sales – Total variable cost = Gross margin

Total variable cost + Total fixed cost = Total cost

Total Revenue – Total cost = Profit

Problems of Palm Kernel Oil Processors

From the data presented in Table 3, it was revealed that the entire respondent agreed that the 5 items listed were the problems encountered in processing palm kernel oil with a mean score, ranging from 3.26 to 3.58, with a standard deviation ranging from 0.33 to 0.37. This implies that the male and female responses are not far from each other with an interval of 0.05 level of significance.

Table 3: Mean Responses of Males and Females on Problems Encountered in Palm Kernel Oil Processing and Sales

S/N	Items	Male		Female		RMK
		\bar{X}	SD	\bar{X}	SD	
1	high cost of transportation to get the raw materials	3.4	0.36	3.5	0.35	A
2	Inadequate capital to get the raw materials	3.37	0.37	3.42	0.38	A
3	High cost of palm kernel fruit	3.58	0.33	3.3	0.34	A
4	Poor road conditions cause the price of palm kernel fruit to be high.	3.26	0.34	3.7	0.29	A
5	The lack of fruit from the palm kernel	3.58	0.33	3.55	0.35	A
	Grand mean	3.43	0.34	3.49	0.34	

Source: Field survey, 2022

4. Conclusion

The results of the study demonstrated that the production of palm kernel oil in Ahoada East Local Government Area, Rivers State, was a successful sector that was dominated by women. In order to overcome the challenges of the enterprise, the processors should form cooperatives in order to attract funds from government agencies and financial institutions that will enable them to purchase oil milling equipment to enhance their production.

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