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PROFITABILITY ANALYSIS OF PALM OIL PRODUCTION IN IGBO ETITI LOCAL GOVERNMENT AREA, ENUGU STATE, NIGERIA

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ABSTRACT

This study analyzed the profitability of palm oil production in Igbo Etiti L.G.A of Enugu State, Nigeria. Both multi-stage random and purposive sampling procedures were used to select 120 small-scale palm oil producers. A structured questionnaire was used to collect data from the participants and analysed using frequency, percentage, and gross margin analysis. The results show that more than half (55.0) percent of palm oil producers use the traditional method of palm oil processing to produce their product whereas 17.5 percent used the mechanical method. The producers sourced their palm fruits mainly from self-sourcing (65 percent), friends and relatives (55.8 percent), and the open market (44.2 percent). The profitability analysis indicates that the total cost of ₦2,503,100 was incurred as the production cost for palm oil in the 2021 production cycle, out of which ₦429,000 representing 17.1 percent was expended on the total fixed assets while the total variable cost gulped ₦2,074,100, representing 82.9 percent of the entire cost. The sum of ₦796,900 was realized as the net profit from palm oil production in the area. This attests to the profitability of palm oil production in the area. The benefit-cost ratio analysis yielded a value above one (1.3), confirming the viability of palm oil production in the area. The study recommends that the government should initiate a policy that will encourage more people to get involved in palm oil production, as well as, facilitate the transition of palm oil production from the traditional method to the mechanical method.

KEYWORDS: Gross margin, palm oil production, traditional method, profitability analysis

INTRODUCTION

Oil palm (Elaeis guineensis) is believed to have originated from the tropical rainforest region of West Africa. Presently, the primary areas of oil palm cultivation are southeast Asia, followed by the West Coast of Africa and Latin America. Oil palm is indigenous to the Nigerian coastal plain, having migrated inland as a stable crop, and grows in both wild grooves and plantations (Carrere, 2013). For decades now, the domestic consumption of palm oil in West Africa has increased more rapidly than its production (Ojo et al., 2014). Prior to now, West Africa which was known as a leading producing region, has after some decades, become a net importer of palm oil (Adah et al., 2022).

Oil palm is mainly processed by traditional methods although this method has been reported to be simple but tedious and inefficient (FAO, 2005). Nevertheless, small-scale processors are the principal processors of palm oil in Nigeria, mostly by traditional and/or semi-mechanized methods (Egwu, Odoh and Eze, 2023). According to Chiemela et al. (2021), about 90% of palm oil production in Nigeria is done using traditional techniques. The traditional methods of palm oil production are very tedious and laborious and it requires a substantial proportion of labour force. The partial adoption of high-tech mills by palm oil producers is a welcome step in the right direction. Though it is capital-intensive; however, it ensures increased efficiency in palm oil extraction and high-quality palm oil (Ojo et al., 2014).

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Oil palm is of great importance to the economy of Nigeria. Palm oil production is a major source of income and employment for a large proportion of the poor rural farmers in Nigeria (Okemini, 2004). It remains a source of palm oil which serves as the main cooking oil in most parts of the countries (Owolarafe et al., 2007; Adah, Akor and Ademu, 2022). Palm oil is a major component of diets in large parts of West Africa including Nigeria. Apart from its major role in our diets, it has industrial usefulness, especially in soap making, margarine, and candle, among others. Palm oil is a major product processed from oil palm fruits in Nigeria (Eric and Ikheloha, 2007). It is processed into cooking oil, raw material for manufacturing industries for the production of soap, creams, margarine, and confectionaries. It is also a major source of biofuel used to drive automobiles as is the case in Malaysia (Ajani, Onwubuya and Nwalieji, 2012).

Every part of the oil palm tree has been found to be useful for various purposes (Ajani et al., 2012). For instance, palm kernel oil is extracted from the nut and the residue from palm kernel oil after extraction (palm kernel cake) is used as livestock feed. Palm kernel oil is used in vegetable oil and soap making. Palm kernel shells are also useful as energy sources and industrial raw materials for the production of mosquito coils (Soyebo et al., 2005). The leaves of the crop are used in making brooms, mats, and roofing thatched houses/huts in rural areas. The bark of the frond is peeled and woven into baskets, flat materials for drying some agricultural produce/food items in the households as well as long cylindrical open-ended baskets for protecting planted seedlings from goats and other roaming animals. The tree trunk is split and used for making building rafters. When the fruit is processed, the residue obtained can be used as fuel for cooking or fertilizer to enhance soil nutrients. A sap tapped from the sterile inflorescence is processed into a drink called palm wine, which is a very rich source of yeast and enjoyed by numerous people both within and outside rural areas; the palm wine can be allowed to ferment and then distilled into a local gin known as Ogogoro in Nigeria (Adah et al., 2022). According to Soyebo et al. (2005) the empty fruit bunch, the shell, and fibre that remain after oil extraction are used for mulching, manuring, and as fuel. The empty fruit bunch when burnt into ashes and processed is also used in making local black soap.

The demand for palm oil in Nigeria has far exceeded production, making the country a net import of the commodity it once was the world's largest producer (Nwibo and Odoh, 2014). This is ostensibly due to the continuous use of outdated equipment in the production and processing of palm oil, the indiscriminate falling of the oil palm trees without replanting, and the demand pressure due to the burgeoning population (Chiemela et al., 2021). These challenges notwithstanding, the palm oil industry is still thriving with steady but gradual growth in production output. For instance, Sasu (2022) reported that between 2009 and 2022, palm oil production in Nigeria witnessed an increase, registering the highest growth in 2010, when it grew by roughly 14 percent. Sasu further noted that from 2014 onwards, the output from palm oil production followed a rising trend, and in 2022, the production of palm oil in Nigeria reached 1.4 million metric tonnes.

Domestic consumption of palm oil in Nigeria has equally been on the rise. Sasu (2022) reported that about 1.8 million metric tons of palm oil were consumed in the country in the 2021/2022 cropping year. This indicates that palm oil is one of the major crops in the country with a growing domestic need. This notwithstanding, it is still unclear how small-scale palm oil producers are tapping into this booming wealth of opportunities to enhance their income from palm oil production. This makes it imperative to analyse the profitability of palm oil production in Igbo Etiti LGA of Enugu State, Nigeria, considering that the bulk of the palm oil produced in Nigeria comes from this segment of producers (Chiemela et al., 2021; Egwu et al., 2023). Moreover, there is a need to determine whether the increase in revenue from palm oil production is enough to offset the cost of production and ensures economic viability of the industry. This is significant to policymakers for developing effective policy intervention for sustainability of the palm oil industry, which is essential for food security and economic development. Specifically, the study assessed the methods and technologies used by palm oil producers; identified the sources of palm fruits utilized by palm oil producers; and analyzed the profitability of palm oil production in the study area.

METHODOLOGY

The Study Area

The study was conducted in Igbo Etiti Local Government Area (LGA) in Enugu State, Nigeria. The area is situated in the Enugu East Agricultural Zone of Enugu State. It is made up of thirteen (13) autonomous communities namely: Aku, Diogbe, Ekwegbe, Ikolo, Ochima, Ochebe Ohodo, Onyohor, Ozalla, Udueme, Ukehe, Umuna, and Umunko. The local government has a population of 209,248 inhabitants who are mainly farmers (NPC, 2006). The local government has two distinct weather seasons, namely; the rainy season (April- October) and the dry season (November-March). The annual rainfall ranges from 750 to 1200 mm with a mean temperature of 35^0C. The most important geographical feature of the area is Ukopi River located in Ekwegbe community and Adada River located within Aku community. One of the important economic activities of the people is oil palm production and processing into palm oil and palm kernel while farming remains the major economic activity of the people. Cocoyam, cassava, yam, groundnut oil, black beans, and maize are the

common major crops produced in this area. The people equally rear livestock such as sheep, the indigenous breed of cattle, goats, poultry, and pigs.

Sampling Techniques

Combinations of multi-stage random and purposive sampling procedures were used to select the small-scale palm oil producers. Both male and female farmers were given an equal chance of being selected. The selection was done using the following stages: Firstly, a simple random sampling technique was used to select four (4) autonomous communities out of thirteen (13) communities in the local government area. Secondly, a simple random sampling was employed to select three (3) villages in each of the selected autonomous community to give a total of twelve (12) villages. Thirdly, the purposive selection of ten (10) small-scale palm oil producers from each village, to give a total of one hundred and twenty (120) respondents formed the sample size for the study.

Method of Data Collection

Data for this study were collected from primary sources only. This was done with the use of a questionnaire which was augmented with an interview schedule for the sake of illiterate farmers.

Analytical Techniques

The data collected for this study were analyzed using descriptive statistics. Specifically, objectives I and II were analyzed using descriptive statistics such as mean, frequency, and percentage while objective III was analyzed using gross margin analysis, and benefit-cost ratio.

Determination of Gross Margin

According to Eze et al. (2023), gross margin is the excess of sales revenue over cost. The purpose of gross margin is to determine the value of incremental sales and to guide pricing and promotion decisions (Eze and Nwibo, 2014). The gross margin is mathematically specified as follows: -

GM = TR – TVC

Where: GM = Gross margin
TR = Total Revenue
TVC = Total variable cost

π = GM – TFC

Where: π = Profit
GM = Gross margin
TFC = Total fixed cost

Therefore, profitability can be expressed as:

NFI = (PQ*Q) – TC (VC+FC)

Where:

NFI =Net farm income
GF = Gross farm income
PQ = Price per unit of output
Q = Total output
TC = Total cost of production
VC = Variable cost
FC = Fixed cost.

Results and Discussion

Methods/Technologies Used for Palm Oil Production in the study area

The data in Table 1 shows that more than half (55.0 percent) of the palm oil producers employ traditional methods of palm oil processing to produce their product whereas 17.5 percent used mechanical methods. This is in line with previous studies that the traditional method of palm oil production dominates the palm oil industry in Nigeria (Nwibo and Odoh, 2014). The method besides being labourious and tedious (Chiemela et al., 2021), has a high propensity of affecting the quantity and quality of palm oil produced in the area because of its high inefficiency (Eze et al., 2023). However, this finding is contrary to that of Chiemela et al. (2021) who reported that semi-mechanical is the predominant method of palm oil production in Nsukka Local Government Area of Enugu State. There is, therefore, a need to upscale the migration of small-scale palm oil producers from the use of traditional technic to mechanical methods so as to improve efficiency in terms of the quality and quantity of palm oil produced in the area.

Table 1: Methods/Technologies Use for Palm Oil Production in the Study Area.

Methods of Palm Oil Production	Frequency	Percentage
Mechanical	21	17.5
Semi-Mechanical	33	27.5
Traditional	67	55.0
Total	120	100.0

Sources of Palm Fruits/Seeds Used for Palm Oil Production

The different sources of fruits/seeds used for palm oil production were assessed. The result shows that self-sourcing (65 percent), friends and relatives (55.8 percent), and open market (44.2 percent) were the major sources of palm fruits/seeds used for palm oil production in the area. However, sources from neighbours with 19.2 percent response recorded the least score. This signifies that many palm oil producers are equally oil palm farmers. Apparently, the heavy reliance of many producers on their farms for the supply may be beneficial to ensure a steady and uninterrupted supply of oil palm fruits/seeds in the short run. However, in the long run, this source may not be sustainable to maintain the all-year-round supply of palm oil fruits/seeds for palm oil production, making it imperative to explore more sustainable sources such as out-growers' arrangements.

Table 2: Sources of Fruits/Seeds Used for Palm Oil Producers in the Study Area

Source of Fruits	Frequency	Percentage
Self-Sourcing	78	65.0
Open Market	53	44.2
ADP	42	35.0
Cooperative Societies	38	31.7
Friends and Relatives	67	55.8
Neighbours	23	19.2

Multiple Responses Recorded

Profitability Analysis of Palm Oil Production

The analysis in Table 3 indicates that a total cost of ₦2,503,100 was incurred as the cost for the production of palm oil in the 2021 production cycle, out of which ₦429,000 representing 17.1 percent was expended on the total fixed assets while the total variable cost was ₦2,074,100, accounting for 82.9 percent of the entire cost. This figure indicates that palm oil producers in the study area are not investing in fixed assets, which resulted in the burgeoning total variable cost. This level of cost affect profit margin. Similar view has been expressed by Chiemela et al. (2021) who found that total variable cost accounted for 65 percent of total cost of mechanical processed palm oil, produced in Nsukka Local Government Area of Enugu State. The sum of ₦3,300,000 was obtained as the total revenue and the sum of ₦796,900 was realized as the net profit from palm oil production in the same area. This attests to the profitability of palm oil production in the area. The benefit-cost ratio analysis gave a value, which is above one (1.3), confirming the viability of palm oil production in the area. This agrees with the finding of Chiemela et al. (2021) who reported that palm oil production in Nsukka Local Government Area of Enugu State is both viable and profitable. It is, therefore, necessary to encourage more people to engage in palm oil production as a means of enhancing their income generation.

Table 3: Gross Margin Analysis of Palm Oil Production in the 2021 production cycle

Items	Unit	Quantity	Price/Unit	Total Price (₦)
A. Revenue				
Palm oil	Litres	6000	550	3,300,0000
Total Revenue				**₦3,300,000**
B. Variable Cost				
Fruit Fermentation	Kg	1800	250	450,000
Bunch Chopping	Kg	1560	150	234,000
Fruit Boiling	Kg	1220	300	366,000
Milling	Kg	670	350	234,500
Mash Pressing	Kg	1140	250	285,000
Oil Purification	Kg	980	200	196,000
Fibre Nut Separation	Kg	880	250	193,600
Nut Drying	Kg	1150	100	115,000
Total Variable Cost				**2,074,100**
C. Fixed Cost				
Capital Cost				
Wheel Barrow		3800	21	**79,800**
Gallon/Calibers		450	96	**43,200**
Heating Drum		1200	120	**144,000**
Mortar and Pistil		850	120	**102,000**
Basket/Bag		250	240	**60,000**
Total Fixed Cost				**429,000**
Total Cost = TVC + TFC				**2,503,100**
GM **=** TR – TVC				**1,225,900**
Net Profit = GM – TFC				**796,900**
BCR = TR/TC				**1.3**

CONCLUSION AND RECOMMENDATIONS

This study analysed the profitability of palm oil production in Igbo Etiti Local Government Area in Enugu State, Nigeria. The findings indicate that palm oil production in Igbo Etiti LGA of Enugu State is dominated by traditional methods. Notwithstanding this though, palm oil production in the area was both profitable and economically viable. However, palm oil producers relied on self-sourcing, friends and relatives, and the open market as their main sources of palm fruits/seeds used for palm oil production in the area. Thus, more people are encouraged to venture into palm oil production in the area. It is, therefore, recommended that the government should initiate a policy that will facilitate the transition of palm oil producers from the use of traditional methods to mechanical methods. It could be through the provision of soft loans to enable acquire the mechanical palm oil processing machines or subsidizing the machines to make them affordable to the producers.

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