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Oil Palm Production and Socio-Economic Development in Oruk Anam Local Government Area, Akwa Ibom State, Nigeria

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Abstract

This study examined oil palm production and socio-economic development in Oruk Anam Local Government Area with emphasis on the contributions of palm oil activities to household livelihoods, employment generation, rural development, and local economic sustainability. The study adopted a survey research design using both quantitative and qualitative approaches. Data were collected through structured questionnaires, interviews, observations, and Focus Group Discussions (FGDs) conducted among 369 respondents selected through a multi-stage sampling technique across nine communities in the study area. Findings revealed that oil palm production remains a major source of livelihood, income generation, and food security among households in Oruk Anam. Palm oil accounted for the highest proportion of household income and daily consumption across the sampled communities, while by-products such as palm kernel oil, palm fronds, chaff, palm wine, and firewood contributed significantly to household welfare, small-scale enterprises, and energy supply. The study further revealed that communities with better access to farmland, modern processing techniques, labour, and transportation infrastructure recorded higher productivity and profitability levels. However, the sector continues to face several challenges including poor road networks, inadequate access to credit facilities, obsolete processing equipment, labour shortages, environmental concerns, and limited technological innovation. The study concludes that oil palm production is a critical driver of socio-economic development in Oruk Anam, but its full developmental potential is constrained by infrastructural and institutional limitations. The study recommends increased government investment in rural infrastructure, modernization of processing facilities, cooperative development, access to credit, and continuous training for oil palm farmers and processors to improve productivity and ensure sustainable rural development.

Keywords: *Oil Palm Production; Socio-Economic Development; Rural Livelihoods; Palm Oil Value Chain; Oruk Anam; Akwa Ibom State, Nigeria.*

1. Introduction

Oil palm (*Elaeis guineensis*), is an African tree in the palm family (Arecaceae) cultivated as a source of oil. The oil palm is grown extensively in its native West and Central Africa, as well as in Malaysia and Indonesia. According to Santika (2019), Palm oil obtained from the fruits, is used in making soaps, cosmetics, candles, biofuels, and lubricating greases and in processing tinplate and coating iron plates. Palm kernel oil, from the seeds, is used in manufacturing such edible products as margarine, ice cream, chocolate confections, cookies, and bread, as well as many pharmaceuticals. Today, oil palm is crucial to the economies of many countries, especially Indonesia and Malaysia, from which large quantities of its products are exported in the form of oil, meal and other derivatives (Murphy 2019). More widely, oil palm is now cultivated in plantations across the humid tropics of Asia, Africa and the Americas, from where its products are exported to global markets (Murphy, 2019; Murphy, et al. 2021). The major importing regions, collectively responsible for about 60% of total palm oil imports, are the Indian subcontinent (India, Pakistan,

Bangladesh) with about 17 Mt, the EU-27 with 6.5 Mt, and China with 5 Mt (Gan, 2020).

Udoh and Essien (2015) said that cultivation of oil palm has experienced significant expansion globally, primarily due to its high oil yield and diverse applications in food, cosmetics, and biofuels. The Foreign Agricultural Services of the US Department of Agriculture (2024) reports that as of 2023–2024, world production of palm oil was 77.3 million tonnes, led by Indonesia with 57% of the total. Palm oil is the main agricultural export of Indonesia and Malaysia, generating 10% and 5% respectively of their exports. The sector provides employment for 721 000 smallholders and labourers in Malaysia and 4 million in Indonesia; a further 11 million in the two countries are indirectly dependent on it (European Parliament Research Service- EPRS, 2018). The annual production of palm oil is projected to reach 240 million tonnes by 2050 (Tullis, 2019). This growth has been driven by increasing global demand for vegetable oils and biofuels. Economically, palm oil production has been a significant contributor to the GDP of producing countries. For instance, in Indonesia and Malaysia, the sector provides employment for millions, including smallholders and labourers, thereby promoting rural development and poverty alleviation.

However, the industry has faced criticism for its environmental and social impacts, including deforestation, biodiversity loss, and social conflicts arising from land acquisition practices. In Indonesia and Malaysia for instance, indigenous communities often lack legal documents certifying their ownership of land, and there are many legal conflicts between oil palm companies granted government concessions in forested areas, and the people who have used the land for centuries (Tullis, 2019). In some cases, this has led to local people losing access to land and resources. There are also serious concerns about abusive labour conditions on some plantations. These challenges have led to the establishment of sustainability initiatives, such as the Roundtable on Sustainable Palm Oil (RSPO), aiming to promote responsible production practices (Roundtable on Sustainable Palm Oil - RSPO, 2018).

The American oil palm (*Elaeis oleifera*) is native to Central and Southern America and is sometimes cultivated under the erroneous name *Elaeis melanococca*. Unlike the African oil palm, the trunk of the American oil palm creeps along the ground and bears flat leaves (Murphy 2019). Both the American oil palm and the maripa palm (*Attalea maripa*) are used to obtain palm oil in some areas. The oil palm production provides a wide range of non-food product that also include animal feeds. These feeds are derived from the seeds or kernels, which contain a protein rich meal residue following oil extraction. Palm kernel meal is an often overlooking product of the crop, but is a useful livestock feedstuff that is exported globally.

Africa is the ancestral home of the oil palm (*Elaeis guineensis*), where it has been integral to local economies and cultures for centuries. Traditionally, oil palm products have been utilized for domestic consumption, medicinal purposes, and local trade. In recent years, Africa consumes around 15% of global palm oil production, far more than it produces, leading to significant imports to meet domestic demand (World Economic Forum, 2022). In West Africa, oil palm cultivation is both a traditional practice and a commercial enterprise. Countries such as Nigeria, Ghana, and Côte d'Ivoire have favourable climates for oil palm growth, making the crop a significant contributor to their agricultural sectors. In Ghana, for instance, oil palm cultivation dates back to the 19th century, with the establishment of palm groves to meet the oil demand for soaps in the Western world (Food and Agriculture Organization of the United Nations, 2024).

In recent years, there has been a resurgence of interest in expanding oil palm cultivation in West Africa to meet both domestic and international demand. For example, in Liberia, oil palm is cultivated primarily in two ways: traditional methods involving local communities practicing slash-and-burn agriculture, and industrial methods involving large-scale corporations growing oil palm as a monoculture across vast areas of land. However, the expansion of industrial oil palm plantations in West Africa has not been without controversy. Mukpo (2020) asserts that companies like Socfin, the largest industrial palm oil producer in Africa with nearly 100,000 hectares planted in seven countries, have faced criticism and campaigning by community organizations and environmental advocacy groups. Issues such as land acquisition practices and environmental concerns have been at the forefront of these disputes.

As of early 1900, Nigeria was producing all palm oil sold in the world market and it was considered a dominant source of foreign exchange. Up until the 1960s, Nigeria was the world's largest producer of palm oil accounting for 43% of global palm oil production (World Bank, 2018). Over-reliance on traditional production methods, excessive tapping of palm trees for palm wine, the civil

war between 1967 to 1970 and the crude oil boom are factors that contributed to Nigeria's inability to meet up with the global rise in demand for palm oil. According to Udoh and Essien (2015), Oil palm is indigenous to the Nigerian coastal plain though it has migrated inland as a staple crop. Cultivation of oil palm serves as a means of livelihood for many rural families and indeed the farming culture of millions of people in the country.

Nwafor (2019) opined that the Nigerian oil palm belt covers twenty-four states, including all nine states of the Niger Delta (Akwa Ibom, Abia, Rivers, Edo, Imo, Ondo, Bayelsa, Cross River and Delta). Within the oil palm belt in Nigeria, 80% of production comes from dispersed smallholders who harvest semi-wild plants and use manual processing techniques. The World Bank has played an important role in the promotion of oil palm business in Nigeria. Nigeria is the second largest recipient of World Bank palm oil sector projects, with six projects from 1975 to 2009, according to a recent World Bank report. The dawn of the twenty-first century witnessed an ambitious attempt to reposition agriculture as the mainstay of the Nigerian economy and specifically to restore Nigeria's pre-eminent position as a net exporter of palm oil.

The Nigeria economy has been described by researchers as an agrarian economy where agriculture plays crucial role in the nation's socioeconomic transformation, apart from being the source of food to the people, it is the greatest employer of labour and provider of incomes, sources of industrial raw materials, and export products for foreign exchange earnings, and has in the past been an important provider of resources for investments in other sectors of the economy (Okon, 2017). In the literature of oil palm production in Nigeria, agriculture has been described as the most important economic sector in terms of its contribution to the GDP, after oil (Scoones, 2019). For example, the sector contributed about 41% of the country's Gross Domestic Product (GDP), employed about 65% of the total population and provided employment to about 80% of the rural population (Bakar et al, 2021).

However, despite the contribution of oil palm production to Gross Domestic Product in Nigeria it has not been able to keep pace with population growth. Oil palm production at subsistence level especially in third world countries does not keep with the pace of rapidly growing population, when compared to advanced or developed economy. Therefore, in this era of structural reforms where the government and other stakeholders are devising blueprints for bridging the gap between the demand and supply of oil palm, more precisely agricultural cooperatives have been used as a platform for improving Nigeria agriculture for years now.

Akwa Ibom State, located in the South-South geopolitical zone of Nigeria, is one of the prominent oil palm-producing states in the country. The state's climate and soil conditions are favourable for oil palm cultivation. In many communities, oil palm production is a cultural practice and a primary source of livelihood (Patrick, Akpan, Udoka and John, 2013). Studies have shown that palm oil processing and marketing are lucrative economic activities in Akwa Ibom, enhancing the financial status of the people and promoting trade (Udoh and Essien, 2015). However, challenges such as poor transportation, gas flaring, oil spill around oil farm plantation, low government incentives, low industrial capacity for value added product expansion, low pricing of goods, and the use of obsolete processing equipment among others persist (Abraham et al 2024; Jimmy et al, 2025; Jimmy, 2025; Ekpeyong et al 2025; Jimmy et al 2025; Nwanegbo et al, 2026; Jimmy et al, 2026).

Oil palm production is a critical socio-economic activity in Oruk Anam Local Government area of Akwa Ibom State, underpinning the livelihoods of many local residents. In these nine (9) communities, the cultivation of oil palm is not merely an agricultural enterprise but a way of life, deeply woven into the socio-cultural fabric of the area. The traditional practices passed down through generations enable smallholder farmers to produce palm oil and related products that support household income, food security, and cultural traditions. This localized production system plays a significant role in bolstering the economic resilience of Oruk Anam. In Oruk Anam, the majority of oil palm cultivation is carried out by small-scale farmers using traditional agronomic methods. These producers often adopt intercropping techniques that help maintain soil fertility and biodiversity while simultaneously generating income from multiple crops. Community-based cooperatives have emerged as key platforms for sharing knowledge, pooling resources, and collectively addressing challenges such as pest management and sustainable harvesting practices. Such cooperative efforts are vital for enhancing productivity and ensuring that the benefits of oil palm production are broadly distributed among community members (Okorie, Okoro, and Eshiet, 2020).

The socio-economic benefits of oil palm production in Oruk Anam are multifaceted. Economically, income generated from the sale of palm oil and its by-products

contributes to improved living standards and stimulates local trade. This infusion of cash has led to increased investments in education, healthcare, and small business ventures within the community. Additionally, oil palm production has created employment opportunities not only in farming but also in ancillary activities such as processing, transportation, and marketing. These activities collectively contribute to the economic vibrancy of Oruk Anam and help mitigate rural poverty

(Okorie et al. 2020), Oil palm is made of essential components, namely; the fronds, the leaves, the trunk and the roots which are used for several purposes ranging from palm oil, palm kernel oil, palm wine, broom, and palm kernel cake (Abah, 2015). Palm oil production is a major vocation which has played significant roles in poverty alleviation in some communities. The huge potentials for generating rural income and providing employment have enabled the poor to be part of the solution to the scourge of widespread poverty.

Despite its significant contributions, oil palm production in Oruk Anam faces several challenges that constrain its full potential for socio-economic development. Many farmers continue to rely on out-dated processing techniques and traditional methods that limit productivity and reduce the quality of the final product. Furthermore, inadequate access to credit facilities, modern agricultural extension services, and efficient market channels hampers growth and innovation within the sector (Corley and Tinker, 2017; Jimmy 2025). Whereas, some reference to oil palm as a crop of multiple value underscores its economic importance. It is against this background that this study seeks to investigate oil palm production and socio-economic development in Oruk Anam Local Government Area of Akwa Ibom State, Nigeria.

2. Materials and Methods

The study was conducted in Oruk Anam Local Government Area, one of the widely known agrarian region in the state. The area consist of Ndot Ikot Eda, Ibesit Ekoi, Ikot Asukpong, Obio Ibiet Nkarika, Nung Oku Ibiet, ObioAkpa, Nung Oku Ubo, Ikot Okoro and Ikot Ntuen among others, where smallholder oil palm production is commonly practiced. These oil palm farmers/workers form the unit of analysis for the study, as they provide the necessary data on capacity of oil palm production systems (value chain), economic, social impact and challenges outcomes.

This study adopted a survey research design approach. With this survey approach, questionnaires were used in collecting data from the respondents. A multi-stage sampling technique was employed to select respondents for the study. This method was adopted to ensure representativeness and to effectively manage the dispersion of the oil palm population within Oruk Anam LGA. In the first stage, three villages were purposively selected based on their known high levels of palm oil production and their diverse socio-economic conditions. This purposive selection was intended to focus on communities where oil palm production is most influential, thus providing rich, context-specific data. In the 2nd Stage, a sampling frame was developed with number of all eligible palm oil workmen/producers. This localized sampling frame served as the basis for random selection. In Stage 3, simple random sampling (SRS) was used to select respondents from each village's list. The overall sample size of 369 respondents was allocated proportionally among the nine villages based on the number of eligible producers in each village. Within each village, households were selected through simple random sampling, ensuring fair representation of palm producers and processors.

Data gathered through questionnaires focused on subjects related to the study's objective. The questionnaire focused on Socio-demographic characteristics (age, gender, education, and household size), Capacity of oil Palm product and utilization (oil, kernel, broom, wine, firewood, etc.), Economic (income, employment, farm size, labour cost, GDP contribution), Social and environment variables (electricity, roads, water supply, markets, pollution, deforestation, hazards, theft, migration) and Production constraints (fertilizer, capital, aging palms, mill maintenance). Data collection was carried out between November and April, 2025 using trained enumerators who administered questionnaires in local dialects where necessary. The questionnaires were used to collect information from farmers, where participants expressed their opinions concerning demographic data and changes in oil palm production with reference to their socio-economic development. Also, palm oil processors, heads and members of households who had lived in the study area for more than 40 years, were interviewed. The reasons was to collect viewpoints, practices, and responses from the participants in order to assess the quality of the data in comparison to pragmatic confirmation. Features pertaining to history, land ownership, palm expansion or degradation, farming methods, and the current practices in oil palm production in Oruk Anam LGA were observed. Since their opinions were documented, the

method was suitable for respondents with lower levels of education who were illiterate.

During the field survey, structured interviews and key informant interviews were conducted with extension officers, cooperative leaders, and local agricultural stakeholders to capture qualitative insights on oil palm practices, institutional support, and socio-economic livelihood dynamics. The face-to-face approach ensured clarity and reduced non-response errors.

In addition to the use of questionnaires, Focus Group Discussions (FGDs) were employed to obtain qualitative data on palm oil production in Oruk Anam Local Government Area of Akwa Ibom State. The FGDs provided an opportunity to explore participants' shared experiences, challenges, and perspectives regarding palm oil farming, processing, and marketing in a collective setting. A total of 369 participants, Focus Group Discussions (FGDs) were conducted, each comprising 8–20 participants drawn from palm oil farmers, women, different gender roles, processors, marketers, local residents and community leaders. Participants were purposively selected to ensure representation of both men and women, as well as different age groups and occupational categories involved in the palm oil value chain.

3. Results and Findings

Table 1: Distribution of respondent by gender

Gender	No. Of respondents	Percentage (%)
Male	160	30.9
Female	209	69.1
Total	369	100

Source: Field Survey (2025)

The data in the Table 1 shows that 209 respondents (69.1) are male while 160 respondents (30.1%) are female. The research therefore featured more male than female.

Table 2: Distribution of Respondents by Age

AGE	No. Of respondents	Percentage (%)
16-24	30	15.3
25-30	110	27.2
31-35	80	19.3
36-40	59	18.0
41-above	90	20.2
Total	**369**	**100**

Source: Field Survey (2025)

The data in Table 2 shows that respondents between ages of 16-24 are 30(15.3%), 25-30 are 110 respondents (27.2%), 80 respondents (19.3%) are between age 31-35, also respondents between age 36-40 are 59 (18.0%) while 40 and above respondents are 90(20.2%). Respondents who are between the ages of 25 to 30 are more in the study.

Table 3: Distribution of the Respondent by Marital Status

Marital status	No. of respondents	Percentage %
Married	160	39.2
Single	70	20.1
Divorced	60	18.6
Widowed	79	22.1
Total	**369**	**100**

Source: Field Survey (2025)

The data in Table 3 reveals that 160 respondents (39.2%) are married, 70 respondents (20.1%) are single, 60 respondents (18.6%) are divorced while respondents (22.1%) are widowed. The study featured more married respondents than others.

Table 4: Capacity of Oil Palm Production Summary (Percentages by Community)

Community	Produce Palm Oil (%)	Purchase Palm Oil (%)	Daily Palm Oil Use (%)	Palm Kernel Oil Use (%)	Palm Wine Use (%)	Palm Oil as Top Income Contributor (%)
Nifor (Ibesit Ekoi)	75	25	75	60	50	72
Esek (Ndot Ikot Eda)	65	35	68	52	40	68
Sitnah (Ikot Asukpong)	70	30	72	55	38	70
Obio Ibiet Nkarika	55	45	65	48	32	60
Nung Oku Ibiet	60	40	70	50	35	65
Obio Akpa	68	32	71	58	42	69
Nung Oku Ubo	66	34	69	54	37	67
Ikot Okoro	62	38	66	50	30	62
Ikot Ntuen	64	36	67	52	33	64

Source: Field data (2025)

Table 4 shows the capacity of oil palm production in the study area. The results shows that communities with larger farmlands (Ibesit Ekoi NIFOR 75% and Ikot Asukpong 70%) show higher percentages for "Produce", indicating reliance on farming. Other centers like Nung Oku Ibiet 40%) lean more toward "Purchase", reflecting market dependence. "Both" responses appear more balanced in mid-sized communities (Obio Ibiet Nkarika, ObioAkpa). This means that Farming communities rely more on self-production, while market-based communities depend on purchase. On the Frequency and Main Use of Palm Oil, Palm oil is used daily in nearly all communities, with rural households showing higher daily consumption. The primary use is cooking across all communities (>70%), though selling for income is notable in Ibesit Ekoi NIFOR, Nung Oku Ibiet and Ikot Asukpong. This implies that Palm oil is both a food security staple and a commercial product. For the Palm Kernel (Source and Use), most kernels are obtained from own farms in agricultural communities, while market purchase dominates in Ibesit Ekoi (NIFOR). Major uses include oil extraction, with selling for income ranking second. Animal feed use is minimal, except in ObioAkpa where livestock farming is common. The Chaff Usage also shows that, Communities with more livestock (Ikot Okoro, Obio Ibiet Nkarika) use chaff as animal feed. Others use it as manure, highlighting integrated farming practices. Disposal as waste is lowest, indicating good resource utilization.

The Palm Kernel Oil (Usage and Purpose) indicated that, not all households use PKO, adoption is highest in farming households. Among users, soap making and skincare/traditional medicine dominate, cooking with PKO is less common and selling PKO provides supplemental income in some communities. The result also shows that almost every community uses palm frond brooms for sweeping compounds. Some communities like, Ikot Ntuen also sell brooms for extra income. Firewood use is still high, especially in rural areas (Ndot Ikot Eda, Obio Ibiet Nkarika). But Usage frequency is daily in rural, occasionally in semi-urban communities. Palm Wine consumption and purpose is widely consumed, but purpose differs: Household consumption is common in most communities. It is mostly used during Cultural/traditional events and stand out in Ikot Asukpong and Obio Akpa. Selling for income is seen in Ikot Ntuen and Ikot Okoro. For the Most Important Product (Income and Livelihood), Palm oil is the top contributor to household income in all communities. Secondary contributions vary in terms of Palm kernel oil being significant in soap-making areas. Palm wine contributes income in event-oriented communities. Brooms and stems are mostly for household use, with little cash contribution. For daily livelihood, palm oil remains the most important, reinforcing its role as both a staple and economic commodity.

Table 5. The economic impact of oil palm production

Communities / Variable	Indicator	Esek (Ndot Ikot Eda)	Nifor (Ibesit Ekoi)	Sitnah (Ikot Asukpong)	Obio Ibiet Nkarika	Nung Oku Ibiet	Obio Akpa	Nung Oku Ubo	Ikot Okoro	Ikot Ntuen
1. Major source of income	Farming	55.2	53.1	52.4	45.4	46.2	48.3	44.6	43.9	42.5
	Trading	18.1	19	20.2	19.8	20.3	22.5	21	23.5	25.1
	Wage/Salary	14	15.5	14.8	17.3	16.2	15.9	18.4	18	17.2
	Other	12.7	12.4	12.6	13.2	13.3	13.3	16	14.6	15.2
2. Monthly income	<₦20,000	20.4	21.5	22.6	25.5	27.2	28.3	29.4	30.5	31.6
	₦20,001–₦50,000	48.1	47.4	46	44	43.3	42	41.2	40	39.4
	₦50,001–₦100,000	22	21.1	20.5	20.4	21.1	20	21	22.1	21.3
	>₦100,000	9.5	10	10.9	10.1	8.4	9.7	8.4	6.4	7.7
3. Palm products contribute	Yes	82	80.5	79	69.4	71	70.2	71.5	72	71
	No	18	19.5	21	30.6	29	29.8	28.5	28	29
4. Employ others	Yes	66.2	64.5	63	60.3	59.2	58.4	57.5	56.2	55.3
	No	33.8	35.5	37	39.7	40.8	41.6	42.5	43.8	44.7
5. Workers employed	1–5	70.1	68.4	67.2	62.4	61	60.8	59.2	57	56.3
	6–10	20.4	21	22	22.5	23.1	23.2	24	25.2	25.4
	>10	9.5	10.6	10.8	15.1	15.9	16	16.8	17.8	18.3
6. Household palm employment	Yes	72	70.5	69	64.3	65.2	64.8	64	63	62.1
	No	28	29.5	31	35.7	34.8	35.2	36	37	37.9
7. Farm size (ha)	Average	3	3	3	2.8	2.8	2.8	2.8	2.8	2.8
8. Farm adequate	Yes	48.4	47	46	37.4	38	38.2	39	39.4	39.6
	No	51.6	53	54	62.6	62	61.8	61	60.6	60.4
9. Intend expansion	Yes	62	60.5	59	57.7	56.2	55	54.1	53.8	53.5
	No	38	39.5	41	42.3	43.8	45	45.9	46.2	46.5
10. Hire labour	Yes	75	74	72.5	69.2	68	67.5	67	66.8	66.5
	No	25	26	27.5	30.8	32	32.5	33	33.2	33.5
11. Daily wage	<₦2,000	18	19	20	20.6	21	21.2	22	22.4	23
	₦2,001–₦4,000	54.5	53	51	50.2	49.8	49	48.5	48	47.5
	>₦4,000	27.5	28	29	29.2	29.2	29.8	29.5	29.6	29.5
12. Labour cost effect	Yes	77	76	75	69.2	70.9	70	71	70.5	70.2
	No	23	24	25	30.8	29.1	30	29	29.5	29.8
13. Palm GDP belief	Yes	78	77	76	59.3	60	61	62	61.5	61
	No	10	11	12	19.3	20	20.5	21	21.5	22
	Not sure	12	12	12	21.4	20	18.5	17	17	17
14. Product GDP	Palm oil	65	64	63	54.4	55	55.5	55	54.5	54
	Palm kernel oil	20	20.5	21	31.8	30.5	29	28	27.5	26
	Palm wine	9	9.5	10	12.7	13	13.5	14	14.5	15
	Other	6	6	6	1.1	1.5	2	3	3.5	5
15. Aware of HCV	Yes	62	61	60	44.3	45	44.8	45.5	46	45.8
	No	38	39	40	55.7	55	55.2	54.5	54	54.2
16. HCV areas	Forest reserve	28	27	26	19.6	20	19.8	20.2	19.5	18.5
	River/Stream	42	41	40	34.3	35	34	34.2	33.5	33
	Sacred land	18	18	18	15.3	15	16	16.2	15.5	15.2
	Endangered habitat	10	11	12	22.6	23	24	23.5	23	22
	Other	2	3	4	8.2	7	6.2	6.1	6	6.3
17. Affect conservation	Yes	45	44	43	31.2	32	33	34	33.5	33.2
	No	40	41	42	32.4	34	35	35.5	36	36.5
	Not sure	15	15	15	36.4	34	32			

Source: Field Data (2025)

3.1 Discussions

Palm kernels were primarily sourced from respondents' farms in agricultural communities, while markets were the main source in more urbanized locations. Households commonly used kernels for oil extraction and sales, while PKO served both household needs (soap, cosmetics, and traditional medicine) and income generation. Only a few respondents reported using palm kernels for animal feed, with this practice being more prominent in ObioAkpa and Ikot Okoro, where livestock farming is more integrated. This finding agrees with Okechalu *et al*. (2011) and Ogunsina *et al.* (2012), who documented the suitability of PKO for soap making and cosmetic applications due to its lauric acid content. The convergence between survey data and experimental studies suggests strong potential for micro- and small-scale enterprises in PKO value addition, provided that

technical and financial support are available, and rural households maximize palm products to diversify both food sources and income streams.

Palm fruit chaff, a by-product of oil extraction, was put to productive use in most communities. The most common uses were as animal feed and organic manure, particularly in farming-dominated areas such as Ndot Ikot Eda and Obio Ibiet Nkarika. This reflects a circular livelihood practice where every part of the palm is reused. Only a small proportion reported disposing of it as waste. Offiong et al. (2022) observed similar patterns in Akwa Ibom, where residues from small-scale oil mills were repurposed as fuel, feed, and manure. Likewise, Onwuka et al. (2017) highlighted the nutritional value of palm press fibre as livestock feed. The survey's findings strengthen the case for promoting low-cost technologies that can process residues into higher-value forms, such as briquettes or composted organic fertilizer. It also reflects an efficient recycling system within rural palm oil production, where by-products are reinvested into farming and livestock production, reducing environmental waste. While not universally used across households, PKO played an important role where adopted. It was primarily used for soap-making, skincare, and traditional medicine, indicating its dual role in household wellbeing and cottage industries. Communities like Nung Oku Ibiet and Ikot Asukpong reported selling PKO, reinforcing its value in small-scale enterprise and local trade shown in Figure 2.

Figure 1: Oil Palm Production Processes, (image on the left shows the selection of fruits, to cooking, pressing, kernel selection from chaff to (kernel oil extraction, image on the right)

Source: Field data (2025)

Palm fronds were widely used for broom-making, with nearly every household reporting use. The main use was domestic cleaning, though some respondents, particularly in Ikot Ntuen and Ikot Okoro, shown in Figure 4.6 indicated selling brooms for supplementary income. This highlights how even low-value by-products of palm trees can contribute to household economies, especially for women and youth engaged in small-scale production. Energy use was another major theme, with respondents reporting frequent reliance on palm stems as firewood which was common, particularly in more rural communities such as Ndot Ikot Eda and Obio Ibiet Nkarika, where reliance on traditional energy sources remains high. In semi-urban areas, palm stem firewood was used only occasionally, suggesting a gradual transition toward modern cooking fuels in such locations. Daily use of firewood underscores energy poverty in rural communities, where alternatives like kerosene and cooking gas remain inaccessible or unaffordable. This dependence underscores both the importance of palm residues as a household energy source and the potential sustainability challenges of over-reliance. Studies by Oke and Akinwale (2019) and Osei-Amponsah et al. (2018) similarly noted that palm residues are widely used as biomass fuel in Nigeria and West Africa, but emphasized the need for improved stoves and renewable alternatives to reduce deforestation and indoor air pollution. This indicates that while palm stems shown in remain vital in rural energy systems, complementary interventions are needed to make such practices more sustainable.

Figure 2: Broom and firewood showing value change of oil palm production

Source: Field data (2025).

Palm wine also played an important role in the surveyed communities, both for cultural and commercial purposes. Consumption of palm wine was widespread but varied in purpose for social events, while others tapped and sold it for income. In communities like Ikot Asukpong and ObioAkpa, palm wine shown in Figure 4.7 was strongly linked to cultural and traditional events, reflecting the social importance of the product. In other areas such as Ikot Okoro and Ikot Ntuen, palm wine was more often produced and sold for income. Household consumption was reported across all communities, emphasizing palm wine's dual role as both a cultural and economic commodity. This aligns with Igwe and Udeh (2020), who described the socio-economic significance of palm wine tapping in southeastern Nigeria. Furthermore, Business Day (2024) highlighted the growing interest in commercializing palm wine through modern distillation and branding. These parallels suggest that beyond its cultural role, palm wine has untapped potential for niche market development, especially in the hospitality and tourism industries. For the Livelihood Contribution, the findings demonstrate that palm products contribute to livelihoods not only as food and income sources but also through cultural, environmental, and energy functions. Across all communities, palm oil ranked as the most important palm product for daily livelihood and household income. However, contributions from other products varied: PKO and palm wine were significant secondary sources of income, while by-products like chaff and brooms supported household resilience by providing feed, manure, and domestic tools.

Figure 3 Value Chain on sawdust and Plywood for building production

Figure 4: Palm oil production process and economic impact

Source: Field data (2025)

4. Conclusion.

The study clearly shows that palm oil and its derivatives remain the backbone of household consumption, income, and livelihood across the nine communities in Oruk Anam LGA. Daily consumption of palm oil underscores its dietary importance, while its economic role as the leading contributor to household income demonstrates its financial significance. By-products such as kernels, fronds, and stems reinforce the multipurpose value of oil palm, promoting sustainability and reducing waste. However, variations in production versus purchase suggest differences in resource access and production capacity across communities. Also, the sector sustains households through direct income from farming and processing while supporting secondary activities such as trading and labour employment. Yet, production is unevenly distributed, shaped by disparities in landholding, farm size adequacy, and labour access. These inequalities limit the capacity of poorer communities to benefit from palm expansion and increase their exposure to economic shocks. Despite these challenges, the widespread optimism about farm expansion reflects strong local confidence in palm as a sustainable livelihood pathway. However, the weak awareness of biodiversity and conservation risks signals potential long-term threats to ecosystem sustainability. Addressing these gaps is critical if palm production is to continue supporting livelihoods while avoiding environmental degradation.

From the FGD, the study concludes that disparities in community performance in oil palm production are largely shaped by access to modern technologies, cooperative labour structures, market linkages, and infrastructure. Communities such as NIFOR and SITNAH demonstrate that with the right mix of technology adoption, input access, and infrastructure, rural farmers can significantly increase efficiency, profitability, and household income. However, the majority of smaller communities remain disadvantaged, constrained by structural bottlenecks such as poor roads, dependence on traditional processing, limited labour supply, and low environmental awareness. Bridging this performance gap requires integrated policy interventions that combine infrastructural investment, technology dissemination, labour organization through cooperatives, and targeted environmental education. Strengthening market access by reducing middlemen dependency and connecting farmers directly with buyers will be particularly crucial in enhancing profitability. If such measures are implemented, oil palm production has the potential not only to improve rural livelihoods but also to contribute more substantially to local economic growth and sustainable development. In conclusion, the regression results strongly reinforce the importance of palm oil in sustaining household economies and highlight the need for policies that support full utilization of palm oil by-products. Extension services should promote knowledge on diversified uses, while infrastructure and market linkages must be strengthened to ensure that households can maximize the economic benefits of palm oil production.

5 Recommendations

Based on findings of the study, the following recommendations were made.

i. Government should provide sufficient funds to facilitate free access to raw materials, payment of

workers and procurement of mechanized machinery for large scale production of oil palm.

Oil palm production sector in Oruk Anam Local Government Area should look into the welfare of the workers to motivate them in doing the work with much zeal and strength, addressing this question is critical for formulating policies and interventions that can transform oil palm production into a more effective engine of sustainable development in the region.

ii. Oil palm production establishment should employ adequate skilled persons to operate machines.

iii. Government should provide good roads in the villages to reduce high transportation cost/ poor road network.

iv. Seminars and workshop should be organized for oil palm workers on the role of modernizing oil palm production practices and addressing sector-specific challenges to enhance both economic growth and community well-being in the region.

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