IMPACT OF OIL PALM CULTIVATION ON INCOME AND EMPLOYMENT IN RURAL COMMUNITIES OF DELTA CENTRAL, NIGERIA

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Abstract
This study was conducted to assess the impact of oil palm cultivation on income and employment generation in rural communities of Delta Central, Delta State, Nigeria. A total of 200 respondents participated in the study. Both descriptive and inferential statistics were used to analyze the data collected. The mean age of oil palm producers in the study area was 48 years. Most of the respondents (73.0%) were male, and the majority (55.0%) were married. The average income of the farmers before engaging in oil palm production was ₦2,859,500.00, while the income increased to ₦3,641,520.00 after engaging in oil palm production. The results indicated a significant difference ($p<0.05$) in income levels before and after oil palm production. Similarly, there was a significant difference ($p<0.05$) in the rate of employment generation before and after oil palm cultivation. Among the challenges identified, insufficient funds ranked highest. Conversely, education was ranked as the most effective strategy for improving the socio-economic outcomes of oil palm cultivation. Further analysis showed that: Educational level had a significant influence on oil palm cultivation ($t = 2.024$, $p<0.05$), Source of finance had a positive and significant influence ($t = 4.667$, $p<0.05$), Access to extension services also showed a positive and significant relationship ($t = 2.015$, $p<0.05$). Based on these findings, it is recommended that government agencies and development partners invest in scaling up commercial oil palm farming and strengthening value chain linkages. To improve income and employment outcomes, policymakers and agricultural development agencies should prioritize the expansion of oil palm production through enhanced access to finance, training, and processing infrastructure.

Introduction
Nigeria's socioeconomic development has been greatly aided by oil palm (Elaeis guineensis), a highly adaptable crop and a gift from nature to the tropics. In most of West Africa, oil palm is the primary source of edible oil and is commonly thought to have originated there. Nigeria is the world's fifth-biggest producer of palm oil from oil palm trees, after Thailand and Colombia, while Indonesia and Malaysia are the world's leading producers (Onojieruo, 2024). Oil palm yields fruits in clusters, which are referred to as fresh fruit bunches (FFB). Crude palm oil (CPO) and palm kernel (PK), which produce palm kernel oil (PKO) and palm kernel cake (PKC) as residue, are the primary products of oil palm (Abideen et al., 2023). The palmae family includes oil palm. Elaeis guineensis, also known as the African oil palm, and Elaeis Melanococca, often known as the American oil palm, are the two primary species in the genus. The latter solely has hybridisation value. Over the years, oil palm has been utilised for a variety of purposes; people use roughly 80% of the product, with the remainder going towards animal feed, energy sources, and other industrial applications. Red palm oil, margarine, edible or industrial frying oil, and other special purpose fats are all products of oil palm, which is highly valuable for human consumption (Achoja et al., 2019; Bassey, 2016). Oil palm derivatives are utilised as raw materials in industries all over the world for a variety of products, such as the production of animal feed, soaps, cosmetics, detergent, inks, epoxy resins, and confections.

Oil palm is very beneficial to health and nutrition because it contains a lot of carotenoids, which raise blood levels of vitamin A and shield the eyes from certain eye conditions. Additionally, oil palm has long been used as a source of biofuel and is high in important fatty acids. Nigeria has an abundance of oil palm, particularly in the southern part of the country. In general, oil palm grows well in tropical and sub-tropical areas such as Indonesia, Malaysia, Thailand, Colombia, Peru, Guatemala, Ecuador, Honduras, Guinea, Ghana, Togo, Venezuela, Angola, Congo, Cameroon, Liberia, Sierra Leone, and others. It may be found in both wild and planted forms (Hervas, 2021). Because of its high oil output per unit area per year, which is significantly higher than that of other vegetable oils, oil palm is one of the crops that produces the most vegetable oil worldwide and is growing at one of the fastest rates. Additionally, compared to other oil crops, it is less expensive for the consumer in the marketplace (Achoja et al., 2019; Bassey, 2016).

The majority of Nigerians who live in the southern region of the country depend on oil palm for their livelihood. Furthermore, every part of the oil palm can be used for beneficial purposes, and it is especially well-suited for

low-tech and low-cost projects like making mats, brooms, baskets, wicker work, and roofing and thatching out of palm ribs and fronds, as well as using the residues for energy and fire lighting. It provides nearly limitless work opportunities as a result of all these applications, making it a source of income and living for a large number of people (Chandran, 2019). The rise in demand for oil palm products has made it necessary to improve the crops in a number of ways, including how they are grown, harvested, and processed in accordance with advised agronomy methods. In order to achieve this harmony, the Nigerian Institute for Oil Palm Research (NIFOR) was founded in Benin City in 1939 with the goal of genetically enhancing oil palm through better agronomic practices, such as planting, cultivation, and harvesting methods; creating pest and disease control strategies; and processing, preserving, storing, and using palm products, among other things (Chandran, 2019).

The oil palm tree, one of Nigeria's most important tree crops, has significantly boosted the country's economy. According to Chandran (2019), the oil palm (Elaeis guineensis) is the most important economic tree in the rural economy of the humid rainforest in South Eastern Nigeria. The oil palm tree is usually considered a whole plant since all of its byproducts and products have a marketable value. Consequently, the whole tree is used. Palm oil is made from the fruit of the oil palm tree. Oil palm is not only used for local food consumption and industry, but it is also a major export commodity that makes up a sizable portion of Nigeria's foreign exchange earnings, which has helped the country's rural areas flourish. Many rural residents in the producing areas are employed by its production and processing (Egwu et al., 2023). Current data shows that Nigeria produces significantly less oil palm. Numerous socioeconomic factors have contributed to this situation in addition to the industry's technological expertise (Onu et al., 2022). Among the reasons for this decline are the oil palm producing system's technological and productive inefficiencies. Numerous reasons contribute to these inefficiencies, such as high labour costs, a lack of transportation-related linking roadways, poor credit facilities, cheap electricity, a shortage of potable water, and a lack of improved industrial equipment. Gender inequality is another factor.

Men and women working in the agricultural sector confront a variety of obstacles, according to Onojieruo (2024). Cultural and socioeconomic contexts influence the roles that men and women play in the agricultural industry (Onojieruo, 2024). Gender influences the production of food crops, according to a 2011 study by the Food and Agriculture Organisation on the subject of gender in agricultural growth. The report also stated that in sub-Saharan Africa, women play a vital role in the production of food crops. Access to contemporary inputs and extension services, the erstwhile monopoly marketing board's control over these elements, and insufficient quality control are some of the environmental and coordination issues that impact Nigeria's oil palm output (Parvand & Rasiah, 2021). These elements complement the structural and agroclimatic elements, which include the size and scope of the manufacturing and processing industries. Nigeria is no longer the world's largest producer of oil palm, according to studies (Abram et al., 2017; Akinyosoye, 2018; Aramide et al., 2021). However, there don't seem to be many studies on the socioeconomic effects of oil palm farming in rural areas. Up until now, the majority of scholarly study has focused on the climatic and agronomic aspects of oil palm production, giving little to no consideration to the socioeconomic factors, particularly the creation of jobs and revenue.

Rural communities continue to face numerous interrelated problems that hinder economic development and quality of life. One of the most pressing issues is low income, which results from limited access to productive resources, small farm sizes, low yields, and poor pricing for agricultural products. This low income sustains a cycle of poverty, making it difficult for families to afford basic necessities such as food, healthcare, and education. The poverty situation is compounded by unemployment and underemployment, as many rural dwellers, especially youth and women, lack access to formal jobs and rely on seasonal, subsistence-level farming activities that offer little economic security. Food insecurity remains a major concern, with households struggling to maintain consistent access to sufficient and nutritious food due to crop failures, high market prices, and poor post-harvest management. In addition, limited access to credit and financial services prevents smallholder farmers from investing in inputs, technology, or farm expansion, thereby reducing their productivity and profitability. Poor infrastructure, such as bad roads, lack of electricity, and inadequate water supply, further isolates rural areas from markets and essential services, increasing production costs and post-harvest losses. The situation is worsened by inadequate education and low literacy levels, which restrict people's ability to adopt improved farming techniques or access information that could help improve their livelihoods. Furthermore, lack of access to stable markets means farmers often sell their produce at unfavorable prices or face exploitation by middlemen, reducing the economic value of their efforts.

Another critical issue is environmental degradation, including soil erosion, deforestation, and declining soil fertility, which undermines sustainable agricultural productivity. Land tenure insecurity also remains a serious barrier, as many farmers do not have legal ownership or long-term rights to the land they cultivate, discouraging investment in land improvements or sustainable practices. Compounding these issues are health-related challenges, such as poor access to healthcare, malnutrition, and the burden of communicable diseases, which

reduce the workforce's effectiveness and drain household resources. Finally, rural communities are increasingly vulnerable to climate change, as erratic weather patterns, floods, and prolonged droughts disrupt farming activities and reduce yields, threatening both food supply and income sources. These challenges, taken together, create a complex web of constraints that require multifaceted and sustainable interventions to overcome. The oil palm sector in Nigeria faces challenges in ensuring sustainable livelihoods for smallholder farmers and rural communities, prompting the need for an assessment of the income and employment generation impacts of oil palm cultivation. While oil palm cultivation has expanded significantly in Nigeria in recent years, its impact on local economies and employment opportunities remains poorly understood. The scarcity of such targeted literature underscores the importance of this study. Due to these problems, the socio-economic impact of oil palm in Nigeria has not been felt in rural communities especially in Delta central, Delta state. This therefore creates a problem that needs to be addressed.

Objectives of the Study

The broad objective of this study was to assess the income and employment generation impact of oil palm cultivation in rural communities of Delta State, Nigeria.

The specific objectives were to: evaluate the relationship between the socio-economic characteristics of oil palm producers in the study area; evaluate the before and after effect of oil palm production in the area of income generation; examine the before and after effects of oil palm cultivation in the area of employment generation; identify the potential risks and challenges in oil palm cultivation and; identify and suggest strategies for improving the socio-economic outcomes of oil palm cultivation in rural communities.

Theoretical Framework

Kombo and Tromp (2006) define a theoretical framework as a group of connected concepts derived from theories. A theoretical framework tries to explain and account for occurrences in order to shed light on why things are the way they are.

Sustainable Livelihoods Framework (SLF): An appropriate theoretical framework for evaluating the socioeconomic effects of oil palm production in Nigeria is the Sustainable Livelihoods Framework (SLF). The Department for International Development (DFID) created this framework, which offers a comprehensive method for comprehending how individuals use various resources and tactics to maintain their standard of living. It is particularly relevant for evaluating agricultural systems and their relationship with rural communities, which is critical in a developing economy like Nigeria (Natarajan *et al.,* 2022). In this study, the SLF was used to analyze the impact of oil palm cultivation on various aspects of local communities' livelihoods, including human, natural, financial, physical, and social capital. Human capital refers to the skills, knowledge, health, and labor available to individuals and communities, which are central to productivity and economic outcomes in agricultural settings. For oil palm farmers in Nigeria, human capital includes the knowledge required for cultivating and processing oil palm, as well as access to healthcare and education that can enhance their productivity (Natarajan *et al*., 2022). The industry is labor-intensive, and the availability of a healthy workforce is essential for achieving high productivity levels. Investments in human capital, such as through education, training, and healthcare, could significantly improve the socioeconomic outcomes of oil palm cultivation, raising incomes and standards of living. However, if investments in human capital are lacking, disparities in skills and access to healthcare could limit the ability of smallholder farmers and rural workers to benefit fully from the oil palm industry. Natural capital, another critical component of the SLF, includes the natural resources and ecosystem services that people rely on for their livelihoods. For oil palm cultivation, land, water, and favorable climatic conditions are vital. In Nigeria, the expansion of oil palm plantations often requires large tracts of land, which can lead to deforestation and other forms of environmental degradation (Natarajan *et al*., 2022). While oil palm cultivation can provide immediate economic benefits to farmers and local communities, it can also deplete natural resources, reducing the availability of fertile land and clean water for future generations. This poses a significant challenge for long-term sustainability. Addressing environmental impacts through sustainable farming practices and conservation efforts will be crucial in ensuring that natural capital is preserved for the future. Financial capital, which encompasses financial resources such as income, savings, credit, and investments, is another important element in understanding the impact of oil palm cultivation on livelihoods. The ability to access financial capital allows farmers to invest in their farms, purchase better-quality seeds or fertilizers, and expand their operations. In Nigeria, the income generated from oil palm cultivation has the potential to raise the living standards of smallholder farmers. However, the degree to which farmers can benefit from these opportunities depends on their access to financial services, such as microfinance and agricultural loans (Serrat, 2017). Without access to credit, smallholder farmers may find it difficult to compete with larger agribusinesses that dominate the industry. Moreover, fluctuating market prices for palm oil can create financial instability, making it difficult for small farmers to sustain their livelihoods. Ensuring that financial services are accessible and inclusive will be essential for maximizing the socioeconomic benefits of oil palm cultivation. Physical capital, which includes infrastructure,

tools, and technology, is also a key factor in the livelihoods of oil palm farmers. Infrastructure such as roads, bridges, processing facilities, and transportation systems is essential for the success of oil palm cultivation, as it allows farmers to transport their products to market efficiently. In regions where oil palm cultivation expands, new infrastructure developments often benefit local communities by improving access to markets, healthcare, and education. This can, in turn, lead to broader economic development and improved standards of living. However, the distribution of these benefits may be uneven. Large plantations may have access to better infrastructure, while more remote or marginalized communities may be left behind. It is important to ensure that the development of physical capital is equitable and benefits all stakeholders in oil palm-producing regions. Finally, social capital, which refers to the social networks, relationships, and institutions that people rely on to achieve their livelihoods, plays a critical role in the oil palm sector. In oil palm-producing regions, farmer cooperatives and community organizations often serve as important sources of support, helping farmers access markets, share knowledge, and advocate for their rights (Serrat, 2017). These networks can enhance the socioeconomic resilience of farmers by enabling them to collaborate, pool resources, and respond to challenges collectively. Strong social capital also helps to foster trust and cooperation within communities, which can mitigate potential conflicts over land and resources. However, the expansion of large-scale oil palm plantations can sometimes erode social capital, particularly when land disputes arise or when local communities are displaced. Ensuring that social capital is maintained and strengthened will be vital for achieving sustainable and inclusive development in oil palm-producing regions.

Research Methodology

This study was carried out in Nigeria's Delta State. The target population for this study includes farmers and households in Delta Central, Delta State, who are directly involved in oil palm cultivation. This area is chosen because of its history of oil palm farming, the high potential for expansion in the sector, and the existing socioeconomic challenges in the region. The study focused on a sample of 200 respondents. The study used stratified random sampling as the primary sampling technique. First, the study area was divided into five strata to select five (5) local government based on local government areas (LGAs) such as Ethiope East, Ethiope West, Sapele, Okpe and Ughelli North within Delta Central. From each LGA, 10 communities/towns (Urhodo, Okoroke, Amukpe, Sapele, Okuegba, Okuno, Orogun, Evwreni, Evwonogba, Mosogar and Okweka were randomly selected, ensuring that both urban and rural areas are represented. Within each selected community, 4 respondents within households which amount to 200 respondents were randomly chosen to participate. This method ensures that the sample is a representative of the larger population, accounting for geographical diversity and other socioeconomic factors.

Data collection was carried out over a period of two months. The data collection team consist of trained enumerators who are fluent in the local languages and familiar with the cultural dynamics of the area. Enumerators visited selected households in the study communities to administer the questionnaire face-to-face, ensuring a high response rate and accurate data collection. Data were therefore collected based on the research questions of the study.

Objective I: Descriptive statistics such as, means, percentage and frequency count were used to analyze and the describe the socio-economic characteristics of the respondents.

The **mean** is used to determine the average value of numerical socio-economic variables such as income, household size, and farm size. It is calculated using the formula:

$$\bar{X} = \frac{\sum Xi}{N} \text{ --- equation 4}$$

Where:

$\bar{X}$ = Mean

Xi = Individual values of the variable

N = Total number of respondents

The mean of oil palm farmers' age, family size, farminug experience etc. were achieved, by summing up all individual age, family size, experience etc. and divided by the total number of respondents.

The **percentage** was used to express the proportion of respondents who fall within a specific category (e.g., gender, education level). It was calculated as:

$$\% = \frac{F}{N} \, X \, 100 \text{ -- equation 5}$$

Where:

f = Frequency of respondents in a category

N = Total number of respondents

Frequency count refers to the number of times a particular response appears in the dataset. It helps in categorizing data such as age group, farming experience, and access to credit.

In order to test the relationship between Socio-economic characteristics and oil palm cultivation, multiple Linear Regression model was used.

It is stated explicitly as;

$Y = X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, \text{----} X_{12} + \mu$ --(Equation 6)

Where, Y= Oil palm cultivation (hectares)

X_1 = Gender (male or female)

X_2 = Age of farmers (years)

X_3 = Marital Status (1=Single, 2=Married, 3 = divorced, 4= widowed)

X_4 = Household size (number of persons)

X_5 = Years of farm experience (years)

X_6 = Level of Education (1= No formal Edu, 2=Primary, 3=Secondary, 3= Tertiary Education)

X_7 = Farm size (hectare)

X_8 = Source of plantation (Inherited plantation, Purchase and Leased)

X_9 = Source of finance (Personal savings, cooperative society, commercial banks and microfinance banks)

X_{10} = Access to credit (0=No, 1=Yes)

X_{11} = Contact with extension agent (1 = yes, 2= No)

X_{12} = Income (amount in naira)

μ = Error term

Objective II: Independent sample T-test was used to evaluate the before and after effect of oil palm production in the area of income generation.

The **independent sample t-test** is used to compare the means of two independent groups to determine if there is a statistically significant difference between them (Omoti, 2017). In this case, it will be used to assess whether there is a significant change in income before and after engaging in palm oil production.

Formula for Independent Sample T-Test

The formula for the independent sample t-test is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n1} + \frac{S_2^2}{n2}}}$$ --------------------------- equation 7

Where:

$\bar{X}_1$ = Mean income before palm oil production

$\bar{X}2$ = Mean income after palm oil production

S_1^2 = Variance of income before palm oil production

S_2^2 = Variance of income after palm oil production

n_1 = Sample size before palm oil production

n_2 = Sample size after palm oil production

Objective III: Independent sample T-test was used to examine the before and after effect of palm oil production in the area of employment creation.

The **independent sample t-test** is used to compare the means of two independent groups to determine if there is a statistically significant difference between them (Omoti 2017). In this case, it will be used to assess whether there is a significant change in employment creation before and after engaging in palm oil production.

Formula for Independent Sample T-Test

The formula for the independent sample t-test is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n1} + \frac{S_2^2}{n2}}}$$ --- equation 8

Where:

$\bar{X}_1$ = Mean employment creation before palm oil production

$\bar{X}2$ = Mean employment creation after palm oil production

S_1^2 = Variance of employment creation before palm oil production

S_2^2 = Variance of employment creation after palm oil production

n_1 = Sample size before palm oil production

n_2 = Sample size after palm oil production

Objective IV: Descriptive statistics such as, percentage and frequency count were used to identify the potential risk and challenges faced by rural communities.

The **percentage** was used to express the proportion of respondents who fall within a specific potential risk and challenges category (e.g., land tenure issues, lack of infrastructures, lack of access to land, environmental

degradation, insufficient funds, lack of improved varieties, theft, herds men invasion, labour shortages and high cost, market volatility, climate change and pest and diseases). It was calculated as:

$$\% = \frac{F}{N} \ X \ 100$$ -- equation 9

Where:

f = Frequency of respondents in potential risk and challenges category

N = Total number of respondents

Frequency count refers to the number of times a particular response appears in the dataset. It helps in categorizing data such as land tenure issues, lack of infrastructures, lack of access to land, environmental degradation, insufficient funds, lack of improved varieties, theft, herds men invasion, labour shortages and high cost, market volatility, climate change and pest and diseases.

Objective V: Descriptive statistics such as percentage and frequency count were used to identify and suggest strategies for improving the socio-economic outcomes of oil palm cultivation in rural communities.

The **percentage** was used to express the proportion of respondents who fall within a specific strategy (e.g., education, trainings, visitation of extension agents, access to credit, infrastructure and social amenities and access to market information). It was calculated as:

$$\% = \frac{F}{N} \ X \ 100$$ -- equation 10

Where:

f = Frequency of respondents in specific strategy category

N = Total number of respondents

Frequency count refers to the number of times a particular response appears in the dataset. It helps in categorizing data such as education, trainings, visitation of extension agents, access to credit, infrastructure and social amenities and access to market information.

Results and Discussion

Socio-economic characteristic of oil palm producer in Delta Central, Delta State

Table 4.1 revealed the socio-economic characteristics of oil palm producer in Delta Central, Delta State.

The result presented in Table 4.1 showed that majority (43.0%) of the respondents were within the age bracket of 40-59 years, 32.0% were within 20-39 years and those within 60-79 years constituted 25.0%. The mean age showed that oil palm producers in the study area were 48 years old. The result implies that oil palm cultivation in Delta Central is largely dominated by middle-aged individuals who possess significant experience, financial stability, and physical strength necessary for the labor-intensive nature of the industry. According to Ayompe *et al.* (2021), middle-aged farmers are more engaged in agricultural activities due to their ability to balance physical endurance with decision-making skills, ensuring productivity and sustainability. Similarly, Balde *et al.* (2019) found that individuals within this age bracket are the primary drivers of rural agricultural enterprises as they have acquired knowledge over time and can access financial resources to invest in improved farming techniques. Table 4.1 revealed the gender distribution of the oil palm farmers in the study area. The result indicated that most (73.0%) of the respondents were male while female constituted 27.0%. The high rate of male respondents in oil palm cultivation indicates that the industry is male-dominated due to the labor-intensive nature of farming, which requires physical strength and endurance. According to Corley and Tinker (2018), men are more involved in oil palm farming because they can handle strenuous activities such as land clearing, harvesting, and processing. Similarly, Darras *et al.* (2019)) found that men dominate agribusiness in rural communities due to societal norms that associate farming with masculinity, while women are often relegated to processing and marketing roles.

The result revealed that majority (55.0%) of the respondents were married, 17.0% were single, 10.0% were divorced, 7.0% were widowed and widower constituted 11.0%. The result suggests that farming is a primary source of livelihood for those with family responsibilities, as it provides financial stability and sustenance. According to Zulkifli *et al.* (2018), married individuals are more likely to engage in agricultural activities because they need to support their households, making them more committed to long-term farming investments. Similarly, Egwu *et al.* (2023) found that married farmers have a stronger motivation to expand their farms and adopt improved techniques due to the pressure of meeting family needs.

Table 4.1 indicated the educational status of oil palm cultivators in the study area. The result revealed that most (33.0%) of the respondents had secondary education, 21.0% completed primary education, 26.0% acquired tertiary education and those without formal education were 19.0%. The result suggests that oil palm cultivation in Delta Central is primarily undertaken by individuals with basic formal education, which equips them with essential literacy and numeracy skills for farm management. According to Tabe-Ojong *et al.* (2023), farmers with secondary education are more likely to adopt improved agricultural practices, keep financial records, and access extension services compared to those with little or no education. Similarly, Egwu *et al.* (2023) found that secondary education enhances farmers' ability to understand market trends and apply better farm management techniques,

increasing productivity. The farming experience of the respondents is shown in Table 4.1. The result revealed that majority (47.0%) of the oil palm cultivators had farming experience of 11-20 years, 44.0% had farming experience of 1-10 years and those 21-30 years farming experience constituted 9.0%. The mean result showed that the oil palm cultivators in the study area had farming experience of 12 years. The result implies that the industry is dominated by experienced farmers who have developed expertise over time, leading to improved productivity and sustainability. According to Egwu *et al.* (2023), farmers with over a decade of experience are more skilled in handling challenges such as pest control, climate variations, and market fluctuations, making them more resilient in the agricultural sector. Similarly, Tabe-Ojong *et al.,* (2023) found that long-term farming experience enhances the adoption of efficient cultivation techniques, contributing to higher yields and profitability.

The household size of the respondents is shown in Table 4.1. The result showed that majority of the oil palm cultivators had household size of 1-5, 43% had 6-10 members and 1.0% constituted 11-15 persons within the household. The mean result showed that the oil palm cultivators in the study area had family size of 5 persons. The result indicated that smaller families dominate the industry, likely due to the economic burden of raising larger families and the shift toward nuclear family structures. According to Ramadhana, *et al.* (2021), smaller household sizes enable farmers to manage resources more efficiently, reducing dependency burdens and allowing greater investment in farm expansion and productivity. Similarly, Sibhatu (2023)) found that oil palm farmers with fewer dependents have better financial stability, enabling them to adopt modern farming techniques and access credit facilities. The farm size of the oil palm cultivators is presented in Table 4.1. The result showed that majority (69.0%) of the respondents cultivated between 1-5 hectares of oil palm, 21.0% cultivated between 6-10 hectares and 10.0% cultivated between 11-15 hectares of land. The mean result showed that the oil palm cultivators in the study area cultivated 4.8 hectares of oil palm tree. The mean cultivation size of 4.8 hectares suggests that oil palm farming in the study area is predominantly small to medium-scale, reflecting limited access to land, capital, and mechanization. According to Ramadhana, *et al.* (2021), most oil palm farmers operate on small-scale farms due to land tenure restrictions and high costs associated with large-scale cultivation. Similarly, Sibhatu (2023) found that smallholder farmers dominate the oil palm industry in Nigeria, relying on family labor and traditional farming methods, which limit expansion.

Table 4.1 indicated the source of plantation in the study area. The result showed that 35.0% of the respondents purchased the land on which the oil palm was cultivated, 48.0% leasehold and 16.5% inherited the oil palm plantation. The result suggested that limited land ownership and high acquisition costs compel farmers to lease rather than purchase farmland. According to Alwarritzi *et al.* (2015), leasehold arrangements are common among small and medium-scale farmers who lack the financial capacity for outright land purchases but still seek access to arable land for cultivation. Similarly, Edwards (2019) found that leasing allows farmers to expand their operations without the long-term financial burden of land ownership, making it a flexible option for agribusiness. Table 4.1 revealed the source of finance for oil cultivation in the study area. The result showed that majority (39.0%) of the respondents financed the oil palm production from their personal savings, 22.0% sourced finance from cooperative society, 20.0% from commercial banks, and 19.0% from microfinance banks. The result implies that limited access to formal credit facilities, compelling farmers to rely on self-funding despite its constraints on expansion and mechanization. According to Chrisendo *et al.* (2022), many small-scale farmers depend on personal savings due to the difficulty in securing bank loans, as financial institutions often require collateral and high-interest rates. Similarly, Balde *et al.* (2019) found that reliance on savings limits farmers' ability to invest in modern equipment and improved seedlings, slowing productivity growth.

The result indicated that majority (70.0%) of the respondents do not belong to cooperative society while 30.0% were members of cooperative society. The result implies that a lack of awareness, trust issues, or difficulties in meeting membership requirements, which limits their access to credit, shared resources, and market opportunities. According to Ahmed *et al.* (2019), many small-scale farmers operate independently due to skepticism about cooperative management and fear of mismanagement or unequal benefit distribution. Baudoin *et al.* (2017) found that some farmers avoid cooperatives due to high membership fees and bureaucratic processes, preferring individual decision-making and financial control. In contrast, Morgans *et al.* (2018) reported that in some agricultural communities, cooperative membership is high, as farmers recognize the benefits of collective bargaining, access to government grants, and reduced costs for inputs and machinery. This difference highlights how perception, accessibility, and structural efficiency influence cooperative participation, with non-members often facing financial and operational constraints compared to those in well-organized farming groups. The result in Table 4.1 showed that most (58.0%) of the respondents had no access to credit while 42.0% had access to credit. The result suggests that lack of access to credit hinder oil palm farmers from expanding their cultivation and improving productivity. Gehrke and Kubitza (2021) found that the lack of access to credit hinder purchase rate of farm input and farm production activities.

The result in Table 4.1 showed that most (86.0%) of the respondents had no access to extension services while 14.0% had access to extension services. The result implies that oil palm farmers lack crucial technical support, training, and information on improved farming practices, which may hinder productivity and efficiency. According to Santika *et al.* (2019b), inadequate extension services in rural areas result from poor government funding, insufficient personnel, and logistical challenges, leaving farmers reliant on traditional methods. Ahmed *et al.* (2019) indicated that limited interaction with extension officers prevents farmers from adopting better pest control, soil management, and modern processing techniques, reducing overall yield and profitability. Table 4.1 also revealed the annual income of the oil palm cultivators in the study area. The mean result showed that the respondents earned ₦3,650,000.50 annually. The mean annual income of ₦3,650,000.50 suggests that oil palm cultivation provides a moderate to high revenue stream, reflecting its economic viability despite challenges such as limited access to credit and extension services. According to Ahmed *et al.* (2019), oil palm farming remains a profitable venture due to the high demand for palm oil and its by-products, which sustain rural livelihoods. Balde *et al.* (2019) showed that farmers earning within this income range can reinvest in improved seedlings, processing equipment, and farm expansion, enhancing long-term profitability.

Table 4.1   Socio economic characteristics of the oil palm producers

Parameters	Frequency	Percentage	Mean/mode
Age			
20-39	64	32.0	
40-59	86	43.0	48 years
60-79	50	25.0	
Gender			
Male	146	73.0	Male
Female	54	27.0	
Marital status			
Single	34	17.0	
Married	110	55.0	Married
Divorced	20	10.0	
Widow	14	7.0	
Widower	22	11.0	
Educational level			
No formal education	38	19.0	
Primary education	42	21.0	
Secondary education	66	33.0	Secondary
Tertiary	52	26.0	Education
Farming experience			
1-10	88	44.0	
11-20	94	47.0	12 years
21-30	18	9.0	
Household size			
1-5	112	56.0	

6-10	86	43	**5 members**
11-15	2	1.0	
Farm size (Hectare)			
1-5	138	69.0	
6-10	42	21.0	4.8 hectares
11-15	20	10.0	
Source of plantation			
Inherited plantation	33	16.5	
Purchase	71	35.5	
Leased	96	48.0	Lease
Source of finance			
Personal savings	78	39.0	Personal savings
Cooperative society	44	22.0	
Commercial banks	40	20.0	
Microfinance banks	38	19.0	
Member of a cooperative society			
Yes	60	30.0	
No	140	70.0	Non cooperative member
Access to credit			
Yes	84	42.0	
No	116	58.0	No access
Access to extension services			
Yes	28	14.0	
No	172	86.0	No access
Annual Income			
1-5,000,000	162	81.0	
5,000,001-10,000,000	30	15.0	**₦3,650,000.50**.
10,000,001-15,000,000	8	4.0	
Large scale (>100 tons per year)	52	26.0	
Number of workers in 2022			
1-5	186	93.0	
6-10	14	7.0	3 workers
Number of workers in 2024			
1-5	112	56.0	

6-10	88	44.0	**5 workers**.

Field Survey, (2025)

4.1.1   Effect of socio-economic characteristics on oil palm cultivation

To assess the effect of socio-economic characteristics on oil palm cultivation, multiple regression was performed. The overall model fit was 32.3% ($R^2 = 0.323$, $p < 0.05$) (see Table 4.1.1 and 4.1.2). This means that the variables can correctly predict oil palm cultivation by 32.3%.

Table 4.1.1 Model summary

R	R Square	Adjusted R Square	Std Error of Estimate	R Square Change	F Change	Df1	Df2	sig. of change
.568	.323	.279	.390	.323	7.427	12	187	.000

Predictors: (Constant), Annual Income, Annual Income, Access to extension, Access to credit, Source of finance, Source of plantation, Farm size, Household size, Experience, Educational level, Marital Status, Gender and Age

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.556	12	1.130	7.427	.000[b]
	Residual	28.444	187	.152		
	Total	42.000	199			

a. Dependent Variable: Cultivation   b. Predictors: (Constant), Annual Income, Annual Income, Access to extension, Access to credit, Source of finance, Source of plantation, Farm size, Household size, Experience, Educational level, Marital Status, Gender and Age

Relationship between Socio-economic characteristics and oil palm cultivation
Age and Oil Palm Cultivation
The result showed that age (b = -001, t = .239) has no significant (p>0.05) influence on oil palm cultivation in the study area. This implies that increase in age has no relationship with oil palm cultivation.
The result suggests that age does not significantly influence oil palm cultivation in the study area, indicating that both younger and older farmers are equally engaged in the practice. According to Tabe-Ojong *et al.* (2023), the involvement of farmers across age groups may be due to oil palm's relatively low entry barriers and the flexibility it offers. Egwu *et al.* (2023) found that oil palm cultivation attracts people of all ages, as it is perceived as a sustainable income source regardless of age, with younger farmers bringing innovation and older farmers offering experience.
The result indicated that gender (b= -.100, t=-1.471) has a negative and insignificant relationship with oil palm cultivation in the study area. This implies that changes in gender or gender type have no influence on oil palm cultivation.

The result suggests that gender does not significantly influence oil palm cultivation, indicating that both men and women participate equally in the practice. According to Ramadhan *et al.* (2021), oil palm farming is often seen as a communal activity that involves both genders, especially in rural areas; where family labor is crucial. Sibhatu (2023) result indicated that gender has little impact on participation in oil palm farming, as both men and women have equal opportunities to engage in cultivation, with women also benefiting from income generation despite gender norms in other agricultural sectors. The result showed that marital status (b=.010, t =.343) has no significant (p>0.05) influence on oil palm cultivation in the study area. This implies that change in marital status has no relationship with oil palm cultivation.

The result suggests that whether a farmer is married or not does not influence their involvement in the practice. According to Sibhatu (2023), marital status may not be a determining factor in oil palm farming because the activity relies more on land access, capital, and knowledge rather than personal relationship status. Similarly, Egwu *et al.* (2023) indicated that oil palm farming is often driven by economic necessity and community involvement, which transcends marital status, with both married and single individuals engaging equally in cultivation. The result showed that educational level (b=0.58, t =2.024) has a significant (p<0.05) influence on oil

palm cultivation in the study area. This implies that increase in educational level has a relationship with oil palm cultivation. The result implies that higher levels of education are associated with better farming practices and outcomes. According to Kubitza *et al.* (2019), educated farmers are more likely to adopt modern farming techniques, access extension services, and manage their farms more efficiently, leading to higher productivity. Tabe-Ojong *et al.* (2023) found that farmers with higher education are better equipped to navigate market dynamics, invest in improved technologies, and improve farm management, thus enhancing the overall success of oil palm cultivation in their areas.

The result indicated that there is a negative (b=-.005, t=-1.018) and insignificant relationship between farming experience and oil palm cultivation. The result implies that increase in farming experience had no influence on oil palm cultivation. The result suggests that farming experience does not significantly impact oil palm cultivation, indicating that more years of farming experience do not necessarily lead to improved practices or outcomes in oil palm farming. According to Alwarritzi *et al.* (2015), experience may not directly influence oil palm productivity if farmers are not exposed to modern techniques or training. However, Abrams *et al.* (2019) found that farming experience plays a critical role in enhancing farm management skills, which can improve oil palm cultivation outcomes, suggesting that experience may have different impacts depending on the region or farming context. The result indicated that there is a positive (b=.001, t=.095) and insignificant relationship between household size and oil palm cultivation. The result implies that increase in household size had no influence on oil palm cultivation. The result implies that household size does not significantly influence oil palm cultivation, indicating that an increase in household size does not lead to greater involvement or success in oil palm farming. According to Chrisendo *et al.* (2022), household size may not have a direct impact on oil palm cultivation, as the farming activity is more dependent on resources such as land and capital rather than the number of household members. However, Edwards (2019) indicated that larger households could provide more labor for oil palm farming, potentially improving productivity, though other factors might play a more significant role.

The result showed that farm size (b=-.008, t =-1.978) has a negative significant (p<0.05) influence on oil palm cultivation in the study area. This implies that increase in farm size has an influence on oil palm cultivation. The result implies that an increase in farm size negatively influences oil palm cultivation, implying that larger farm sizes may be associated with challenges such as difficulty in managing the land efficiently or higher operational costs. According to Cahyadi and Waibel (2016), larger farm sizes can lead to greater resource management issues, especially when farmers lack the capital or labor to maintain extensive plantations. In contrast, Castiblanco *et al.* (2015) found that larger farms, when managed effectively, can lead to higher productivity and profitability by utilizing economies of scale, suggesting that farm size's impact depends on management practices. The result showed that source of plantation (b=.038, t =.985) has no significant (p>0.05) influence on oil palm cultivation in the study area. This implies that changes in source of plantation have no relationship with oil palm cultivation. The result suggests that the source of plantation does not significantly affect oil palm cultivation, indicating that whether the plantation is established through leasehold or ownership does not influence cultivation practices. According to Abrams *et al.* (2019), the success of oil palm farming is more influenced by factors such as land management and access to resources rather than the ownership type. Balde *et al.* (2019) found that oil palm farmers, regardless of their plantation source, are equally engaged in cultivation practices, and the primary challenges and benefits arise from farm management rather than the plantation's origin.

The result revealed that source of finance (b=.148, t =4.667) has a positive and significant (p<0.05) influence on oil palm cultivation in the study area. This implies that increase or changes in source of finance has a relationship with oil palm cultivation.

The result indicates that the source of finance significantly influences oil palm cultivation, meaning that access to financial resources is crucial for improving cultivation practices. Mehraban *et al.* (2021) argue that securing financing enables farmers to invest in necessary inputs, such as quality seedlings and modern farming tools, which can enhance productivity. Baudoin *et al.* (2017) indicated that access to external finance or credit facilities allows farmers to scale up production and adopt innovative practices. Therefore, improving financial support for oil palm farmers can positively affect the growth and sustainability of their cultivation efforts. The result indicated that there is a positive (b=.336, t=5.507) and a significant (p<0.05) relationship between access to credit and oil palm cultivation. The result implies that the higher the rate of access to credit the higher the rate of oil palm cultivation. The result suggests that increased access to credit positively impacts oil palm cultivation, meaning that farmers with better access to financial resources are able to expand or improve their cultivation practices. Mehraban *et al.* (2021) indicated the credit access enables farmers to invest in farm inputs, machinery, and technology, leading to increased productivity. Gehrke and Kubitza (2021) emphasized that credit access is crucial for scaling up oil palm operations, as it allows farmers to overcome financial barriers and improve efficiency. Therefore, providing more access to credit can foster growth in oil palm cultivation.

The result indicated that there is a positive (b=.171, t=2.015) and a significant (p<0.05) relationship between access to extension services and oil palm cultivation. The result implies that increase i access to extension services will lead to increase in oil palm cultivation. The result suggests that increased access to extension services positively affects oil palm cultivation, meaning that farmers who receive better support and guidance are likely to improve their farming practices. Tabe-Ojong *et al.* (2023) finding showed that extension services provide farmers with valuable knowledge on modern farming techniques, pest control, and efficient resource management, leading to higher productivity. Egwu *et al.* (2023) found that extension services play a critical role in bridging knowledge gaps and improving the skills of farmers, thus enhancing the sustainability and profitability of oil palm cultivation. The result showed that annual income (b=4.767E-009, t = .367) has no significant influence on oil palm cultivation in the study area. This implies that increase in annual income or changes in annual income has statistical and significant relationship with oil palm cultivation. The result indicates that annual income does not significantly influence oil palm cultivation, suggesting that changes in income levels do not directly impact farming practices. According to Egwu *et al.* (2023), income may not always be the determining factor in oil palm cultivation, as farmers may prioritize other factors like access to land, labor, or resources. Sibhatu (2023) argued that higher income can indirectly boost productivity by enabling farmers to invest more in their farms. Therefore, while income is important, other variables may play a more substantial role in cultivation practices.

Table   4.1.2   Relationship between Socio-economic characteristics and oil palm cultivation

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-.200	.200		-1.002	.318
Age	.001	.003	.017	.239	.811
Gender	-.100	.068	-.097	-1.471	.143
Marital Status	.010	.029	.022	.343	.732
Educational level	.058	.029	.125	2.024	.044
Experience	-.005	.005	-.076	-1.018	.310
Household size	.001	.012	.006	.095	.924
Farm size	-.008	.004	-.153	-1.978	.049
Source of plantation	.038	.039	.062	.985	.326
Source of finance	.148	.032	.296	4.667	.000
Access to credit	.336	.061	.362	5.507	.000
Access to extension	.171	.085	.133	2.015	.045
Annual Income	4.767E-009	.000	.029	.367	.714

a. Dependent Variable: Cultivation

4.2   Before and after effect of oil palm production in the area of income generation

The mean showed that before oil palm production, the farmers generated ₦2859500.00 and after oil palm production, the farmers generated ₦3641520.00. The result indicated that there was a significant difference (p<0.05) between income generated before oil palm production and after oil palm production. The income increased approximately 27.34% after oil palm production. This indicates a substantial rise in earnings, indicating that oil palm production contributes significantly to the economic well-being of farmers. According to Chandran (2019), agricultural value addition, such as oil palm processing, enhances farmers' financial stability by creating new revenue streams and increasing profitability. Ayompe *et al.* (2021) emphasized that agricultural cultivation fosters income and economic growth and sustainability among farming communities. Thus, the study's outcome supports the argument that oil palm production serves as a viable strategy for boosting farmers' income (Chandran, 2019).

Table 4.2   Before and after effect of oil palm production in the area of income generation

	T	df	Mean	Sig.	Mean (2-tailed)	Lower Difference	Upper
Before Oil Palm Production	14.506	199	2859500.00	.000	2859499	2470776.87	3248221.13
After Oil Palm Production	16.191	199	3641520.00	.000	3641519	3197995.85	4085042.15

4.3   Before and after effects of oil palm cultivation in the area of employment generation

Table 4.3 presents a before-and-after analysis of oil palm cultivation's effect on employment generation, showing that the mean employment increased from 2.08 before oil palm production to 3.57 after, with a significant mean difference of 1.08 and 2.57 respectively, while the paired sample t-test results, with t-values of 23.137 before and 28.979 after. The result indicated that there was a significant ($p<0.05$) difference between rate of employment generation before and after oil palm cultivation. Employment increased by approximately 71.63% after oil palm cultivation. The result indicated the expansion of oil palm farming has positively influenced job creation. According to Abrams *et al.* (2019), agricultural intensification and the establishment of agro-processing industries contribute to increased employment opportunities by engaging more labor in farming, harvesting, and processing activities. Castellanos-Navarrete *et al.* (2019) highlighted that oil palm cultivation fosters rural employment by providing jobs across various segments of the value chain, including planting, maintenance, harvesting, and processing. The adoption of commercial oil palm farming significantly improves employment rates in farming communities by creating both direct and indirect job opportunities. Additionally, Edwards (2019a) argued that investment in oil palm agribusiness leads to economic diversification, as it generates employment in related industries such as transportation, marketing, and machinery maintenance. This result reinforces the assertion by Kubitza and Gehrke (2018) that the oil palm sector plays a crucial role in reducing unemployment and promoting economic growth in rural areas. Therefore, the significant difference observed in employment generation before and after oil palm cultivation underscores the sector's potential in fostering economic development and improving livelihoods.

Table 4.3   Before and after effects of oil palm cultivation on employment generation.

	T	Df	Mean	Sig. (2- tailed)	Mean Differnce	Lower	Upper
Employment Before Oil palm Production	23.137	199	2.08	.000	1.080	.99	1.17
Employment after oil Palm production	28.979	199	3.57	.000	2.570	2.40	2.74

4.4   Potential risk and challenges faced by rural communities

Table 4.4 indicated the potential risk and challenges faced by rural communities in oil palm cultivation in the study area. The result showed that Insufficient funds ranked 1st as the potential challenge faced by rural communities in oil palm cultivation in the study area.

The mean scores of 2.40 for self-sufficiency and 2.43 for access to raw materials, both below the mid-point of 2.5, indicate that these are considered insignificant benefits by the respondents, suggesting that oil palm cultivation has limited impact on ensuring self-sufficiency or improving access to raw materials in the study area. According

to Santika *et al.* (2019b), self-sufficiency in agricultural production is often hindered by farmers' reliance on external inputs, such as fertilizers, machinery, and labor, which are not locally sourced. Krishna et al. (2017b) indicated that oil palm farmers in some regions struggle to achieve self-sufficiency or secure local raw materials, as they face challenges in managing supply chains and obtaining adequate resources for processing. The result showed labour shortages and high cost ranked 2nd most potential challenge faced by rural communities in oil palm cultivation in the study area. According to Andrianto *et al.* (2019), labor shortages are a common issue in rural areas, where younger generations migrate to urban centers for better job opportunities, leaving older farmers to manage the workload. Pye (2019) found that high labor costs and limited access to mechanization significantly hinder the growth of oil palm farming, as farmers struggle to balance production costs with income. The result indicated that Lack of improved varieties ranked 3rd, Lack of infrastructures ranked 4th, Environmental degradation 5th, Theft 6th, Climate change 7th, Land tenure issues 8th, Lack of access to land 9th, Pest and diseases 10th, Market volatility 11th, and Herds men invasion 12th potential challenges faced by rural communities in oil palm cultivation in the study area.

The ranking of "Lack of improved varieties" (3rd), "Lack of infrastructure" (4th), and "Climate change" (7th) as potential challenges indicates that while farmers face significant challenges in accessing high-yielding oil palm varieties and essential infrastructure, climate change is perceived as a relatively lesser threat in the study area. According to Chukwuma (2019), the lack of improved varieties limits productivity and resilience, as farmers continue to rely on outdated cultivars that are more susceptible to pests and diseases.

Table 4.4   Rank order of Potential risk and challenges faced by rural communities

Challenges	Yes	No	Rank order
Land tenure issues	80(40.0)	120(60.0)	8th
Lack of infrastructures	124 (62.0)	76(38.0)	4th
Lack of access to land	70(35.0)	130(65.0)	9th
Environmental degradation	118(59.0)	82(41.0)	5th
Insufficient funds	156(78.0)	44(22.0)	1st
Lack of improved varieties	126(63.0)	74(37.0)	3rd
Theft	110(55.0)	90(45.0)	6th
Herds men invasion	30(15.0)	170(85.0)	12th
Labour Shortages and high cost	128(64.0)	72(36.0)	2nd
Market volatility	60(30.0)	140(70.0)	11th
Climate change	94(47.0)	106(53.0)	7th
Pest and diseases	68(34.0)	132(66.0)	10th

Field Survey, (2025). Note: The figures in parenthesis are percentages.

4.5   Strategies for improving the socio-economic outcomes of oil palm cultivation
Table 4.5 revealed the strategies for improving the socio-economic outcomes of oil palm cultivation. The result indicated that education ranked 1st strategy for improving the socio-economic outcomes of oil palm cultivation in the study area.
The ranking of education as the 1st strategy for improving socio-economic outcomes in oil palm cultivation highlights the importance of knowledge and skill development in enhancing farming practices, productivity, and overall profitability. According to Akporise and Okoh (2024) and Egwu *et al*. (2023), education enables farmers to adopt modern farming techniques, understand market trends, and make informed decisions, thereby increasing

efficiency and income. Cramb and Curry (2017) found that farmers who received agricultural education and training were better able to manage their farms, resulting in improved yields and better integration into the agricultural value chain. Educated farmers are also more likely to access extension services, adopt sustainable practices, and improve their financial literacy, leading to greater socio-economic benefits. This finding aligns with the emphasis placed on education in rural development programs, where knowledge dissemination is seen as key to achieving long-term agricultural and economic success.

The result showed visitation of extension agents and infrastructure and social amenities ranked 2nd strategy for improving the socio-economic outcomes of oil palm cultivation in the study area. The result also indicated that training ranked 3rd, access to credit 4th, and access to market information strategy for improving the socio-economic outcomes of oil palm cultivation in the study area. According to Egwu *et al.* (2023), extension agents provide farmers with technical advice, new farming techniques, and access to vital information that can improve productivity and sustainability. Tabe-Ojong *et al.* (2023) finding showed that the presence of extension services helps bridge knowledge gaps and empowers farmers to implement best practices, leading to higher, yields and better economic outcomes. The importance of infrastructure, such as roads and processing facilities, was also highlighted, as it facilitates market access and reduces post-harvest losses.

Table 4.5 **Rank order of Strategies for improving the socio-economic outcomes of oil palm cultivation**

Strategies	Yes	No	Rank order
Education	148(74.0)	52(26.0)	1st
Trainings	124(62.0)	76(38.0)	3rd
Visitation of Extension Agents	130(65.0)	70(35.0)	2nd
Access to Credit	120(60.0)	80(40.0)	4th
Infrastructure and Social Amenities	130(65.0)	70(35.0)	2nd
Access to Market Information	106(53.0)	94(47.0)	5th

Field Survey, (2025) Note: The figures in parenthesis are percentages

Conclusion
The findings of the study highlight the critical role of financial support, educational attainment, farm size, credit access, extension services, and community development in enhancing oil palm cultivation in the study area. The greatest benefits were notably seen in access to credit, extension services, educational attainment highlighting the significance of institutional assistance and basic formal education in improving oil palm cultivation. The positive and significant relationships between these factors and oil palm farming indicate that improving access to finance, credit, and extension services can significantly boost oil palm production. Additionally, the strong link between oil palm cultivation and community development underscores the broader socio-economic benefits of this agricultural practice, including job creation, improved livelihoods, and local economic growth. Age, gender, marital status, experience, household size, and yearly income were among the socioeconomic factors that did not statistically significantly affect oil palm farming. This shows that oil palm cultivation is a broad agricultural pursuit that draws people of all ages, genders, marital statuses, and family sizes. These findings imply that structural and resource-based factors, rather than individual demographics, are the main drivers of oil palm cultivation.

Conversely the study concludes that while personal characteristics may not directly affect oil palm cultivation, institutional support (e.g., credit and extension services) and capacity-building (education and training) are critical levers for improving productivity and sustainability in the sector. Therefore, policies and interventions aimed at increasing access to finance, credit, and extension services are essential for fostering sustainable growth in the oil palm sector and promoting overall community development. These efforts can create a more resilient and prosperous agricultural economy, contributing to the long-term development of rural areas.

Recommendations
Based on the findings of this study, the following recommendations can be made.
1. Farmers should explore various financing options, such as low-interest loans or grants, to support farming. Additionally, policies promoting access to credit should be implemented, as this has shown a positive impact on oil palm cultivation.
2. Government and agricultural bodies should enhance extension services to provide farmers with modern agricultural practices, pest management techniques, and market information. Educational programs

aimed at improving literacy levels and promoting advanced farming techniques should also be prioritized.

3. Labour shortages and high costs were identified as significant challenges. To mitigate this, mechanization of farming operations could be introduced, alongside skills training programs to improve the capacity of local labour. Additionally, public-private partnerships could help reduce costs and improve infrastructure in rural areas.

4. As farm size has a negative influence on oil palm cultivation, smallholder farmers should be encouraged to consolidate land or form cooperative farming groups to achieve economies of scale. Additionally, improved infrastructure and social amenities in rural areas would create a more conducive environment for oil palm cultivation.

5. In order to enhance the employment generation, it is recommended that government agencies and development partners **invest in scaling up commercial oil palm farming and strengthening value chain linkages.** This should include support for smallholder farmers through access to improved seedlings, extension services, and credit facilities, as well as the promotion of agro-processing enterprises.

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