

**Contract Farming and Small-Holder Farmers' Involvement in Oil Palm Production in Akwa Ibom North West Senatorial District-Nigeria**

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**Abstract**

*The study was carried out to determine the extent to which contract farming influence small-holder farmers' involvement in oil palm production in Akwa Ibom North West Senatorial District. To guide the study, two specific objectives, two research questions and two null hypotheses were formulated. Descriptive survey design was adopted for the study. The population of the study was 10,230 registered oil palm farmers. Taro Yamane's formular was used to draw a sample size of 364 respondent and multistage sampling techniques from two ADP zones in the study area. The researcher made instrument was used in generating data for the study titled Contract Farming and Small-Holders' Involvement in Oil Palm Involvement Questionnaire (CFSHIOPQ). The instrument was face validated by three experts and Cronbach Alpha technique was used in determining the reliability index of the instrument which yielded reliability coefficient of 0.90. Regression statistics was used in answering both research questions and for testing the null hypothesis at 0.05 level of significance. The finding revealed that centralized contract farming approach and informal contract farming approach with p-value of 0.024 and 0.001 respectively, to a high extent influence small-holder farmers involvement in oil palm production. Based on the findings of the study, it is recommended among others that contractors/buyers should ensure that the interest rate of loan given to farmers by financial institutions affiliated to centralized contract farming is low for easy repay and continuity of the multipartite contract farming business. Government at all level should support the adoption of centralized and informal contract farming by regulating contract agreement to be standardized to avoid cheat on farmers.*

**Keywords:** Contract farming, Oil palm production and Smallholder farmers

**Introduction**

Today, Cultivation of oil palm is indigenous to small holder farmers in South- south, South-east and South-west Nigeria particularly Akwa Ibom, Cross River, Delta, Benue, Edo, Enugu and Kwara States. They harvest clusters of semi-wild palms and engage in manual processing activities. Nigeria was the world's leading producer and exporter of palm produce in the 60s before she lost the position to other countries (Indonesia and Malaysia) due to bankruptcy, poor management of the resources and negligence (FAO 2002). Most of the oil palm plantations then were owned by Nigerian government and were assisted by various organizations such as European Union, World Bank, UNIDO, Nigerian Institute for Oil Palm

Research (NIFOR) among others before they were abandoned. Following this failure, NIFOR suggested that promotion of private sector participation in oil palm plantation holds the key in revival of the oil palm business in Nigeria. Efforts have been made by successive Nigerian governments to diversify the economy following the fall in crude oil price but nothing has been done about oil palm sub-sector (Akpan, 2010). Contract farming is suggested by NIFOR has not received adequate attention, therefore its applicability is localized and not widely known and accepted by farmers.

Contract farming is a component of Agricultural transformation programme in Nigeria that is meant to disseminate technical skills, develop markets, guarantee access to inputs and organize the enterprise in a profitable way (Ogunleye & Ojedokun 2014). It is considered by most authors to be a positive development for the inclusion of farmers in markets, food security and global poverty reduction (Setboonsarng & Leung, 2014; Bellemare & Novak, 2015). Though contract farming is the outcome of a complex process influenced by many different factors and where policies and projects shape the enabling environment in which a firm and a farmer agree on a contract, policy makers, international organizations propose contract farming as a way to improve the inclusion of farmer in markets, and consider it a development strategy (Setboonsarng & Leung, 2014).

Contract farming is considered to be a positive development for the inclusion of farmers in markets, food security, and global poverty reduction (Bellemare & Novak, 2015). Levels of provisions offered by contractors depend on the type of contract farming engaged in. Mansur, Tola, and Ationg, (2009) enumerated the five types of contract farming which are centralize, nucleus estate, multipartite, informal and intermediary contract farming. The first type of contract farming is the centralize contract farming involving a vertical coordination where the sponsor purchases the oil from smallholder farmers on individual basis or farmer groups, processes and markets the product. Uniform product/quality of oil palm is tightly controlled and quantity is determined at the beginning of the growing season. This is because the quality of the final product after processing is tightly dependent on the quality of the inputs used. As such oil palm farmers are duly supplied with inputs.

The informal contract farming is run basically by individual, entrepreneurs or small companies who make simple, informal production contracts with oil palm farmers on a seasonal basis. The agreements are generally oral and loose in their specifications. Oil palm farmer is only assured of market for his produce at a price rate that is slightly higher than the market price, in certain cases contractors do not even assure farmers of purchasing the produce. The contractor here has less economic and political power and cannot provide much supporting services to farmers. The degree of vertical integration is very low (Da Silver & Rankin 2013).

Contract farming is becoming an increasingly important aspect of agribusiness, whether the products are purchased by multinationals, smaller companies, government agencies, farmer cooperatives or individual entrepreneurs. As noted above, the types would appear to have considerable potential in countries where small-scale agriculture continues to be widespread, as in many cases smallholder farmers can no longer be competitive without access to the

services provided by contract farming companies. It must be stressed, however, that the decision to use the contract farming, modality must be a commercial one. Contract farming is typically used to organize production of perishable, high-value commodities for a quality sensitive market (Tuan, 2012). There is a wide range of organizational structures that are embraced by the term “contract farming”. The choice of the most appropriate one to use depends on the product, the resources of the company, the social and physical environments, the needs of the farmers and the local farming system.

Oil palm cultivation has some specific characteristics and the need why it should be contracted. The crop provides year-round and predictable yields over an economic life span of twenty-five years (Sayer *et al.*, 2012). The growing conditions of oil palm are best in the tropical belt, with regular high rainfalls and solar radiation. High investments are necessary upfront to establish the plantations and bridge the three or four years after field planting until the palm starts bearing fruit. Potential of contracting oil palm produce is so numerous since it serves multiple purposes. For instance, an estimated (74–80%) of global palm oil production is consumed as food, (World Bank, 2011; United State Department of Agriculture. Foreign Agricultural Service USDA FAS, 2010). The oil and derivatives are also used in the oleo-chemical industry (to produce soaps, cosmetics, plastics and many more), the medical and bio-energy industry. The by-products are from palm oil processing are used as animal feed, organic fertilizer and as a source of energy.

Hazell *et al.* (2007) defined small-holder farmers as “those with less than two hectares of crop land” while others defined smallholders as those endowed with ‘limited resources,’ such as land, capital, skills and labor. Based on an empirical observation by Kong (2014), the term smallholder farmer is defined as those who hold small plot of land size of less than 5 hectares and principally rely on their family members to grow crop. For a number of reasons, smallholders often have lower yields than plantation companies.

Oil palm is an important commodity that features prominently in Akwa Ibom North-West Senatorial District’s economic development and supports the population and rising urbanization that is demanding more food, feed for livestock, man and raw materials for industries. This is why this sought to find out the extent to which contract farming can influence smallholder farmers’ involvement in oil palm production in Akwa Ibom North-West Senatorial District.

### **Statement of the Problem**

Oil Palm production remains a major occupation in many communities in Akwa Ibom State. Oil Palm production has been very profitable in sustaining families economically and domestically. It involves hundreds of thousands of producers and tens of thousands of processors, providing income for many farmers and their dependents. It is evident that an efficient oil palm sector in Nigeria will enable the poor to be part of the solution to poverty challenge through provision of employment and means of livelihood. Unfortunately, most oil palm businesses seem to be cumbersome because of the use of the traditional methods and facilities for production and processing with less economic value, thus becoming less attractive.

While the Nigerian economy in principle is aimed at increasing export capacity, her agriculture is still facing many challenges and difficulties, including high production costs, poor and unstable quality products, and low incomes thereby discouraging smallholder farmers' involvement. Similarly, in Akwa Ibom state, the agricultural sector has been dominated by traditional cultivation technologies and smallholder farming systems. Oil palm farmers are faced with the problem of marketing of primary processed products and places to borrow or acquire equipment that would be economically profitable and bring real benefits to the farmers or processors. To make agriculture a priority both to improve the quality of agro-products and increase smallholder farmers' income now that crude oil revenue has reduced drastically, there is need to encourage agricultural production through various intervention strategies such as contract farming especially in oil palm production. The question is, are the farmers getting the necessary collaborations? if any, to what extent? It is the rationale for this study to determine the extent to which contract farming influence small holder farmers' involvement in oil palm production in Akwa Ibom North-West Senatorial District.

The purpose of this study was to determine the extent to which contract farming influence small-holder farmers' involvement in oil palm production in Akwa Ibom North-West-Senatorial District. Specifically, the study sought to determine the extent to which;

1. centralize contract farming influence small-holder farmers' involvement in oil palm production.
2. informal estate contract farming influence small-holder farmers' involvement in oil palm production.

The following research questions were posed to guide the study.

1. To what extent does centralized contract farming influence small-holder farmers' involvement in oil palm production?
2. To what extent does informal contract farming influence small-holder farmers' involvement in oil palm production?

The following null hypotheses were formulated and tested at 0.05 level of significance.

1. Centralized contract farming does not significantly influence small-holders farmers' involvement in oil palm production.
2. Informal contract farming does not significantly influence small-holders farmers' involvement in oil palm production.

This study was conducted in Akwa Ibom state, Nigeria and it focused on determining the extent to which types of contract farming influence smallholder farmers' involvement in oil palm production for sustainable supply in Akwa Ibom state. The study was specifically conducted in Akwa Ibom North-West Senatorial District which comprised, Abak and Ikot Ekpene Agric. Development Programme (ADP) zones of Akwa Ibom State. The sub-variables in focus are centralized and informal contract farming, while the respondents were the registered small-holder farmers' in the study area.

## **Methodology**

Descriptive survey design where part of the population studied and selected sample represented the whole population was used. Data was gotten from a group of registered smallholder farmers on contract farming in oil palm production and the information was sourced through the use of questionnaire. The study was conducted in Akwa Ibom North-West Senatorial District, of Akwa Ibom State. The researchers choose the study area because their major occupation is predominantly subsistence farming. Small holders in this settlement are financially disadvantaged as a result of low-income returns.

The population of the study was 10,230 registered oil palm farmers in Akwa Ibom North-West Senatorial District (Akwa Ibom State Ministry of Agriculture and Natural Resources (AKSMANR), 2016). The sample size of 364 respondents (registered oil palm farmers) was determined using Taro Yamane formula. Multistage sampling technique was adopted for the study to ensure even distribution of respondents selected for the study. The first stage was to cluster the ten local government areas of Akwa Ibom North-West Senatorial District into two ADP Zones (as done by AKSMANR). Simple random sampling technique of balloting was used to select the respondents from four LGAs (i.e. two LGAs in each of the ADP Zones found in the study area).

The researcher-structured questionnaire titled “Contract Farming and Small-Holders’ Involvement in oil palm Production Questionnaire (CFSHIOPQ)” was developed. The questionnaire consists of 47 items. The instrument has two sections designed to collect data from the respondents. Part I was designed to collect respondents’ personal demographic information of location of farm and type of contract farming engaged in. Section II was divided into six sections (A B and C), which examined the specific purpose of the study and level of farmers involvement. Section A contained 10 items of centralized contract farming influence on farmers’ involvement in oil palm production; Section B had 10 items designed to identify informal contract farming influence on farmers’ involvement in oil palm production; while section C has 25 items designed to find out level of involvement in contract farming by oil palm farmers. A four point rating scale options of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) were used for section B and C. High involvement (HI), Moderate Involvement (MI), Little Involvement (LI) and No Involvement (NI) for section G with numerical values of 4, 3, 2, and 1 respectively were used.

The questionnaire was faced-validated by three validates from the University of Uyo for scrutiny. The comments from the experts helped in modifying for improvement of the instrument. In determining the reliability of the instrument, the researcher administered the instrument personally to 30 respondents within the study area who were not part of the actual sample of the study. The data generated through split-half technique was analyzed using Cronbach’s Alpha analysis to establish internal consistency. The reliability coefficient of 0.90 was obtained for the entire instrument which indicated that the instrument has high internal consistency thus suitable for the study. 364 copies of the questionnaire were administered to farmers with the help of three research assistants while 350 questionnaires were properly

completed and retrieved within seven days of administration. This gave the retrieval rate of (96.15%). Data generated were analyzed using simple linear regression statistical analysis. R coefficient of  $\pm 1$  and  $R^2$  values were used to answer the research questions and simple linear regression statistics was used to test the null hypotheses at 0.05 alpha levels.

To take decision on the level of farmers' involvement, interpretation of correlation coefficient (R) was used for answering research question items were as follows: The interpretation showed that correlation coefficient (R) with  $\pm 0.00$  to  $0.19$  has very low relationship as such the adjusted  $R^2$  value of  $< 0.1$  indicates poor fit; coefficient (R) with  $\pm 0.20$  to  $\pm 0.39$  has low relationship as such the adjusted  $R^2$  value of  $0.11- 0.3$  indicates modest fit; coefficient (R) with  $\pm .40$  to  $\pm .50$  has fairly high relationship as such the adjusted  $R^2$  value of  $0.31-0.5$  point out moderate fit; coefficient (R) with  $\pm 0.60$  to  $\pm 0.79$  has high relationship as such the adjusted  $R^2$  value of  $>0.5$  point out strong fit; coefficient (R) with  $+ .80$  to  $+ 1.0$  has very high indicates relationship (Cohen, Manion and Morrison, 2011).

In testing the null hypotheses, the significant value on the SPSS sheet was compared with the conventional significant value of 0.05. Where the significant value on the SPSS sheet was greater than or equal to the conventional significant value of 0.05, the null hypotheses ( $H_0$ ) was upheld. On the other hand, when the significant value on the SPSS sheet was less than the conventional significant value, the null hypotheses were rejected.

### Results

In this section, the research questions which guided the study were answered using R coefficient of  $\pm 1$  and  $R^2$  values statistics and hypotheses were tested in the study at .05 level of significance.

**Research Question 1:** To what extent does centralize contract farming influence small-holder farmers' involvement in oil palm production?

**Table 1: Regression analysis on centralize contract farming influence on small-holder farmers' involvement in oil palm production in Akwa Ibom North-West senatorial district**

Model	Unstandardized Coefficients		Standardized Coefficients	R	$R^2$
	B	Std. Error	Beta		
Centralized contract farming	2.259	0.071		0.865	0.749
	0.421	0.020	0.865		

(Source: 2017 field work)

Table 1 analysis reveals a correlation (R) of 0.865. This indicates that the extent to which centralized contract farming influences small holders' farmer involvement is high. The regression equation is  $y=2.259+0.421x$ . (centralized contract). This implies that for every unit increase in centralized contract farming, small-holder farmers' involvement increases on the

average by 0.421 times. Besides, the  $R^2$  value of 0.749 implies that (74.9%) of small-holder farmers' involvement is attributed to centralized contract farming.

**Research Hypothesis 1:** Centralized contract farming does not significantly influence small-holder farmers' involvement in oil palm production.

**Table 2: Simple linear regression analysis on centralize contract farming influence on small-holder farmers' involvement in oil palm production in Akwa Ibom North-West Senatorial District**

Source of Variance		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	35.771	1	35.771	444.02	0.024 <sup>a</sup>
	Residual	12.004	349	0.081		
	Total	47.775	350			

R = 0.865,  $R^2 = 0.749$ , Significant @  $p < 0.05$

Table 2 shows the regression analysis of the linear regression,  $F(1,350) = 444.02$ ,  $p = 0.024$ . Since the observed p-value is less than the significant level of 0.05, the null hypothesis which states that centralize contract farming does not significantly influence small-holder farmers' involvement in oil palm production, is rejected. Thus, centralized contract farming accounts for approximately (74.9%) of the explained variability in small-holder farmers' involvement in oil palm production in Akwa Ibom North-West Senatorial District. This implies that adequate arrangement, timely supply and honoring of contracting terms in centralized contract farming significantly influences small-holder farmers' involvement in oil palm production in Akwa Ibom North-West Senatorial District.

**Research Question 2:** To what extent does informal contract farming influence small-holder farmers' involvement in oil palm production?

**Table 3: Regression analysis on informal contract farming influence on small-holder farmers' involvement in oil palm production in Akwa Ibom North-West Senatorial District.**

Model	Unstandardized Coefficients		Standardized Coefficients	R	$R^2$
	B	Std. Error	Beta		
Informal contract farming	0.001	0.273		0.742	0.551
	0.955	0.071	0.742		

Table 3 analysis reveals a correlation (R) of 0.742. This indicates that the extent to which informal contract farming influences small holder farmer involvement is high. The regression equation is  $y=0.001+0.955x$  (informal contract). This implies that for every unit increase in informal contract farming, small-holders farmer’s involvement will increase on the average by 0.955 times. This means that (55.1%) variation in small-holders farmer’s involvement was as a result of adequate arrangement on informal contract farming. Besides, the  $R^2$  value of 0.551 implies that 55.1% of small-holder farmers’ high involvement is attributed to centralized contract farming.

**Research Hypothesis 2:** Informal contract farming does not significantly influence small-holder farmers’ involvement in oil palm production

**Table 4: Simple linear regression analysis on informal contract farming influence on small-holder farmers’ involvement in oil palm production in Akwa Ibom North-West Senatorial District**

Source of Variance	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	26.311	1	26.311	182.64	0.018 <sup>a</sup>
Residual	21.464	349	0.144		
Total	47.775	350			

$r=0.724$ ,  $R^2=0.551$  Significant @  $p<0.05$

Table 4 shows the regression analysis of the linear regression,  $F(1,350)=182.64$ ,  $p=0.018$ . Since the observed p-value is less than the significant level of 0.05, the null hypothesis which stated that informal contract farming does not significantly influence small-holder farmers’ involvement in oil palm production, was rejected. Thus, informal contract farming accounted for approximately (72.4%) of the explained variability in small-holder farmers’ involvement in oil palm production in Akwa Ibom North-West Senatorial District.

### Findings of the Study

The findings of the study are summarized as follows:

1. Centralized contract farming and Informal contract farming with the R value of 0.865 and 0.742 respectively to a very high extent influence small-holder farmers’ involvement in oil palm production.
2. Centralized contract farming and Informal contract farming with p-value of 0.024, 0.030 and 0.0181 respectively from the analysis significantly influence small-holder farmers’ involvements in oil palm production.



### **Discussion of the Findings**

The finding of the study revealed that centralized contract farming to a high extent influences small-holder farmers' involvement in oil palm production. Furthermore, findings showed that centralized contract farming significantly influences small-holder farmer's involvement in oil palm production in Akwa Ibom North-West Senatorial District. This finding is in-line with the findings in the work of Bijman (2008) who reported that the contractors support farmers with all inputs (certified seeds, herbicides, fertilizers, and crop insurance), making payment to farmers within 48hours and complete avoidance of middle men system. The findings also agree with the findings of Kalimang`asi, Kihombo, and Kalimang`asi (2014) who observed that smallholder farmers agreed that being in contract had increased access to training, credits, production quantity, production acreage, timely purchase and timely payment. The findings of Champika and Abeywickrama (2014) noted that full time farmers who have higher proportion of agricultural income, higher agricultural land holdings as well as agricultural and family labour participation were more prominent in adopting centralize contract farming system. It is not out of place to assert that centralize contract farming significantly influence smallholder farmers' involvement as it addresses issues that bothers oil palm producers.

The finding of this study on informal contract farming revealed that informal contract farming to a high extent influences small-holder farmers' involvement in oil palm production. Most farm challenges cannot be solved without contact with contractors. Oil palm farmers' involvement in contracting depends on the benefits at stake in terms of reduction of production risk, certainty of purchase, supply of farm inputs, financial assistance and availability of written agreement for referral purpose. Absence of these benefits will negatively influence oil palm farmers' involvement and commitment to contracting terms. This finding agrees with the work of Mansur, Tola and Ationg (2009) who reported that informal production contracts with farmers are often on seasonal basis. Material inputs are often restricted to the provision of seeds and basic fertilizers, with technical advice limited to grading and quality control matters.

### **Conclusion**

Oil palm is an important economic commodity of national and international importance. Access to a guaranteed source of inputs and markets as well as agricultural extension services is important for the development of smallholder agriculture, because it helps to create the necessary demand and enables smallholders to increase their volumes of output and a higher income from farming through contract farming depending on the type. On the basis of the findings of this study and discussion of same, the following conclusions were drawn centralize and informal contract farming to a high extent influence small-holder farmers' involvement in oil palm production. Furthermore, centralized and informal contract farming significantly influence small-holder farmers' involvement in oil palm production. Contract farming therefore should be encouraged by government, NGOs and prominent persons in the society.

Farmers themselves should take advantage of the scheme. Finally, contract farming conditions should be made simple for all farmers to embrace.

### **Recommendations**

Based on the findings of this study, the following recommendations are made:

1. Government at all level should support the adoption of centralized and informal contract farming by regulating contract agreement to be standardized to avoid cheat on farmers.
2. Farmers should take advantage of technical services and continuing education provided by contractors in centralized contract farming to learn skills that will sustain them in agricultural business in a vast changing environment.

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