ECONOMICS ANALYSIS OF OIL PALM PRODUCTION IN IFE EAST LOCAL GOVERNMENT AREA OF OSUN STATE, NIGERIA

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Abstract – Oil palm is appreciated by most people in the Southern part of Nigeria because of its level of utilization with respect to the various products and by-products that can be obtained from it; such as; palm oil, palm kernel oil and palm kernel cake. Oil palm gives the highest yield of oil per unit area, compared to any other oil producing plant when processed, and it produces two distinct oils; Palm oil and Palm Kernel Oil which are of great importance in the industrial market. The study examined the economic analysis of oil palm production in Ife east local government, Osun State, Nigeria and specifically look at the socio-economic characteristics of oil palm farmers, estimate the cost and return of the oil palm producers in the area, analyze the factors that influence output of palm producers in the study area and identify the constraints militating against oil palm production in the study area.

Multistage sampling method was used in select 120 respondents who were interviewed with the aid of structured questionnaire. The data were analyzed with descriptive statistics, descriptive statistics, budgetary technique and multiple regression models were used as analytical technique.

The results showed that 63.3% of the respondents were male, 55.8% of the respondents were between the ages ranges of 41-50 years with the mean age was 51 years, 96.6% of the respondents were married, 85.8% of the respondent's secondary school education, 73.3% of the respondents had between 5-8 household members, 78.3% of the respondents had between 5-8 hectares of farm land with the mean farm size of 4 hectares, 60.0% of the respondents had between 11-20 years of Oil palm production experience, 90.8% of the respondents acquired their farming land through inheritance, 99.2% of the respondents do have access to credit through family and friends, 57.5% do have access to credit through cooperatives societies, 57.5% of the respondents realized between N200,100-N400,000 annually, the analysis ration showed that the benefit cost ration (BCR) was greater than one, 93.3% of the respondents encountered problem of inadequate capital or lack of access to credit in Oil palm production, 100.0% encountered problem of price fluctuation in Oil palm production. The result of regression analysis showed that Age and sex is negatively significant at 1% level, years spent in school and farm size is positively significant at 1% level. Access to credit, cost of hiring labour and transportation cost is negatively significant at 1% level, extension contact is negatively significant at 5% level respondents in the study area.

It was concluded that credit has negative impacts on the production of oil palm an therefore it was recommended that government should make available loan able fund and credit available to oil palm producers to tackle the menace of pest and diseases,

Keywords: Oil palm, profitability, multiple regression, multi stage sampling

INTRODUCTION

The oil palm (*Elaeisguineensis*) is an ancient plant originated from and grown in tropical rain forest region of West Africa. The oil extracted from its fruits has been used as food and medicine through ages. The oil palm now spreads from 16°N in Senegal to 15°S in Angola and eastward to Zanzibar and the Malagasy Republic. However, the main oil palm belt of West Africa runs through the Southern latitude of Sierra Leone, Liberia, Ivory Coast, Ghana , Togo, Benin, Nigeria, Cameroon and into the equatorial region of the democratic Republic of Congo and Angola between latitude 10°N and 10°S 9 (Atinmo, 2013). During the 14th to 17th centuries, some palm fruits were taken to the America from there to the Far East (FAO [Food and Agricultural organization, 2012).

Nigeria used to be the world's largest producer of oil palm *(Elaeisguineensis),* before the crude oil boom era and now Malaysia has taken the leading position (Onwubuya *et al.*, 2012).Nigeria is the third largest producer of palm

oil in the world after Malaysia and Indonesia (Omoti,2013). It also accounts for about 72% (1.3 million tonnes per annum) of Nigeria's total vegetable oil production and contributes to the country's foreign exchange earned yearly (Omoti, 2013). Oil palm is appreciated by most people in the Southern part of Nigeria because of its level of utilization with respect to the various products and by-products that can be obtained from it; such as; palm oil, palm kernel oil and palm kernel cake. Oil palm gives the highest yield of oil per unit area, compared to any other oil producing plant when processed, and it produces two distinct oils; Palm oil and Palm Kernel Oil which are of great importance in the industrial market (FAO, 2012). Oil palm also has the highest yield of any oil seed crop, averaging 3–4 tonnes of mesocarp oil per ha per year in the major palm oil producing countries (Wahid 2005).Palm oil and palm kernel oil were once very vital to Nigeria's export trade, as Nigeria was a leading producer of oil palm products in the world (Ibitoye *et al.*, 2011).

Palm oil is the world's highest yielding oil crop, with an output 5–10 times greater per hectare than other leading vegetable oils. Combined with historically low prices, relative shelf stability, and reported nutritional benefits (Bethe, 2010), palm oil leverages natural advantages that position it as a likely long-term staple of the global diet. Rapidly expanding populations and changing consumption patterns, as well as increasing demand from the bio-energy and oleochemicals industries, have resulted in sustained high prices for crude palm oil. These market forces have driven enormous growth of the palm oil industry in recent decades. Analysts predict further palm oil demand acceleration in the near term potentially a 36% increase by 2012 over 2010 baselines, and more than 65% growth by 2020 (Mielke, 2011).

Africa has a wider range of oil palm varieties than other regions. Most modern varieties are from the *Tenera*group, with thin shell and thick mesocarp, which was developed by crossing the wild-type *Dura* (thick shell, thin mesocarp) and shell-less *Pisifera*. *Tenera*varieties have high oil content, are easier to process than wild oil palm (Poku 2012) and are widely cultivated in Asia (Wahid *et al.,* 2015).

Consequently, it gives rise to two distinct oils; palm oil from the mesocarp of the fruit, and palmkernel oil-from the kernel. Palm kernel oil is distinct from palm oil in terms of its fatty acidcomposition. The bulk of palm oil that is produced goes into food applications; hence its

nutritional properties have been extensively studied. Palm oil is currently the second largest traded edible oil and accounts for about one quarter of the world's fats and oil supply (Ibekwe, 2008). Red palm oil can be extracted from the fibrous layers of the nuts of the fruit bunch. Palm oil is locally used in cooking and in the manufacture of candles, margarine and soap. The palm branch which bear the fruit develops into fruit bunches, each bearing up to 200 fruits is a drupe (fleshyfruit containing one seed enclosed in a stony endocarp). It is oval in shape, but varies in size and color, depending on the variety. Fruits are red, yellow, orange and blackish-red when ripe. The fruit has a fairly thin exocarp surrounding the mesocarp. This is a fibrous oily layer. Palm oil is extracted from the mesocarp (Akangbe *et al.,* 2011).

Mathew (2009) also identified the two varieties grown in Nigeria as Dura and Tenera. Dura isthe common wild palm found all over Nigeria. The fruit has a thick shell and a large kernel.

Itgives a low amount of palm oil and begins to yield 6 to 7 years after planting. Tenera has a thin shell and a small kernel. It produces a high quantity of palm oil. It bears fruit 3 to 5 years after planting. This type is grown in the new plantation.

In this view this research work is proposed to supply relevant information and answers to the following research questions:

i. What are the socio-economic characteristics of the oil palm farmers in the study area?
ii. What are the cost incurred and the return accruable by farmers in the study area?
iii. What are the factors influencing the output of oil palm producers in the study area?
iv. What are the constraints militating against oil palm production in the study area?

RESEARCH METHODOLOGY

The study was carried out in Ife East Local Government Area in Osun State the population of the study will comprise of all oil palm farmers in the study area. A multistage sampling technique will be employed. The first

stage will involve purposive selection of the Local Government for the study. The second will involve random selection of 3 wards from the local government. The third stage will involve random selection of two villages from each ward to make a total of six villages from the 3 wards. From each village, twenty respondents will be systematically selected from the villages. Finally, a total of 120 respondents will be interviewed for the study. Primary data was employed. The data was collected from various oil palm farmers in the study area through the use of structured questionnaire (for the literates) supplemented with oral interview schedule (for the illiterates).

Descriptive statistics such percentages, mean, frequency distribution, and tabulation were used to analyse socio-economic and farm characteristics of the respondents as well as constraints facing oil palm farmers. A Budgetary analysis was used to estimate cost and return of oil palm farmers' production and also to determine the net farm income of the oil palm farmers while multiple regression analysis was used to analyse the factors influencing the output of oil palm production in the study area.

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

From table 1 63.3% of the respondents were male while the remaining 36.7% of the respondents were female that is engaged in Oil palm production in the study area. This result showed that more male were involved in Oil palm production, this may be due to the nature of works required.

55.8% of the respondents were between the ages ranges of 41-50 years, 30.0% were between the age ranges of 51-60 years, 11.7% of the respondents were between the age range of 60 years and above while the remaining 2.5% were between the age ranges of less or equal to 40 years. Also, the mean age was 51 years. This is an indication that the respondents were in their active and productive years.

96.6% of the respondents were married, while 1.7% of the respondents were widowed and divorced respectively. The result implies that all the respondents were married and this will have a positive effect on their worked in that they can have a family labour which will complements their hired labourer in their Oil palm production in the study area.

73.3% of the respondents had between 5-8 household members, 15.0% of the respondents had between 1-4 household members while the remaining 11.7% of the respondents had greater than 8 household members. The result shows that all the respondents had varies household size. This could be as a result of their levels of accepting family planning information. Moreover, the mean household size was 7 individuals. This was an indication that most of the families do not engage adequately in family planning. Although high increased in household number could help in supplying of family labour.

Table 1: Distribution of the respondents by Sex, Age, marital status, Household size

Sex	**Frequency**	**Percentage**
Female	76	63.3
Male	44	36.6
Total	**120**	**100.0**
Age (Years)		
< 40	3	2.5
41 – 50	67	55.8
51 – 60	36	30.0
> 60	14	11.7
Total	**120**	**100.0**
Marital Status		
Single	-	-
Married	116	96.6
Widowed	2	1.7
Divorced	2	1.7
Separated	-	-
Total	**120**	**100.0**

Household size		
1 – 4	18	15.0
5 – 8	88	73.3
> 8	14	11.7
Total	**120**	**100.0**

Source: Field Survey, 2018

Distribution of respondent of the farm Size, Year of experience, Methods of land acquisition

Table 2 shows that 78.3% of the respondents had between 5-8 hectares of farm land, 37.5% had between 1-4 hectares of farm land while the remaining 10.0% of the respondents had 8 hectares and above of farm land, with the mean farm size of 4 hectares. The result shows that all the respondents had varies farm size.

60.0% of the respondents had between 11-20 years of Oil palm production experience, 18.3% had between 21-30 years of Oil palm production experience, 14.2% had between less or equal to 10 years of Oil palm production experience while the remaining 7.5% of the respondents had between 30 years and above Oil palm production experience. The result shows that all the respondents had varies years of Oil palm production.

90.8% of the respondents acquired their farming land through inheritance, 69.2% of the respondents acquired their farming land through leasing, 47.5% of the respondents acquired their farming land through renting while 30.8% of the respondents acquired their farming land through purchasing.

Table 2: Distribution of the respondents by Farm size, Years of experience and Methods of land acquisition of the respondents

Farm size	**Frequency**	**Percentage**
1 – 4	45	37.5
5 – 8	63	52.5
> 8	12	10.0
Total	**120**	**100.0**
Years of experience		
≤10	17	14.2
1 – 20	72	60.0
20 – 30	22	18.3
> 30	9	7.5
Total	**120**	**100.0**
Methods of land acquisition		
Inherited	109	90.8
Lease	83	69.2
Purchased	37	30.8
Rented	57	47.5
Communal	-	-
Total	**120**	**100.0**
***Multiple Response**		

Source: Field Survey, 2018.

Distribution of respondent of the Revenue, Cost and Return

Table 3 shows that 57.5% of the respondents realized between ₦200,100-₦400,000 annually, 37.5% of the respondents realized between ₦400,100-₦600,000 annually, 4.2% of the respondents realized between less or equal to ₦200,000 annually while the remaining 0.8% of the respondents realized between ₦600,000 and above annually.

The gross margin and profitability analysis of the respondents which shown the average total cost of ₦6,755,000 which include labour cost, transportation cost, cost of space in the market, association due per annum etc., while the total revenue was ₦9,176,000. The gross margin was realized by deducting the total variable cost from the total revenue of the respondents which gives ₦4,349,000. And the net profit of ₦2,421,000. The analysis ration

showed that the benefit cost ration (BCR) was greater than one and it is the one of the concepts of discount method of project evaluation. Therefore, since the BCR equals ₦1.12k, it implies that for every ₦1 invested in Oil palm production ₦1.36k is achieved with the profit of ₦0.36k and suggested that cattle marketing is profitable.

Table 3: Distribution of the respondents by the number of cattle owned

Revenue (₦)	**Frequency**	**Percentage**
≤ 200,000	5	4.2
200,100 – 400,000	69	57.5
400,100 – 600,000	45	37.5
≥ 600,000	1	0.8
***Multiple Responses**		
Revenue/Cost	**Amount (₦)**	
Total revenue	₦9,176,000	
Total variable cost	₦4,827,000	
Total Fixed cost	₦1,928,000	
Gross Margin (GM)	₦4,349,000	
Net Profit (π)	₦2,421,000	
Benefit Cost Ratio (BCR)	₦1.36k	

Source: Field Survey, 2018.

Regression Analysis

Table 4 shows the result of regression analysis in table 20 showed that the R square is 0.82.76, which implies that 82.76% variation in total revenue of the respondents is explained by the independent variables listed in table 20 below while 17.24% was catered for by the error included in the model; also the adjusted R^2 was 0.7913.

Age and sex is negatively significant at 1% level, which implies that as the respondents is growing old it will reduced how they work on their farm, their agility and they may not be able to manage their business proper and thus will lead to reduction in their revenue. Years spent in school and farm size is positively significant at 1% level which implies that an increased in numbers of years spent in school will enhanced them in understanding of management involved in oil palm production, better knowledge of identifying crop (oil palm tree) in their healthy conditions etc in the study area, also increase in farm size will lead to increase in output of the farmer which in turns will leads to increase in revenue of the respondents. Access to credit, cost of hiring labour and transportation cost is negatively significant at 1% level which implies that as an increase in cost of hiring labour and transportation cost will increase the cost of production and thus reduce the revenue of the respondents in the study area, the negative significant of the access to credit may be due to the low level of access to credit in the study area. Extension contact is negatively significant at 5% level, this was due to reduction in extension contact in the study area and this will reduce the revenue of the respondents in the study area, in that the respondents may lack knowledge about the latest production techniques in oil palm production.

Table 4: Regression Analysis

Variables	**Co-efficient**	**Standard Error**	**t-value**
Sex	-30193.74	12379.36	-2.44**
Age	-6033.764	993.7962	-6.01***
Years spent in school	9931.03	1908.062	5.20***
Farm size	4499.297	1391.922	3.23***
Farming experience	882.9748	966.999	0.91
Major occupation	5648.717	13590.63	0.42
Membership of association	-21429.24	16846.59	-1.27

Method of land acquisition	3331.067	11567.57	0.29
Access to Credit	8887.924	1208.588	-7.35***
Extension contact	-9441.17	3893.735	-2.42**
Cost of herbicides	-1.154214	1.722965	-0.67
Cost of hiring labour	-1.260773	0.3711799	-3.40***
Transportation cost	-25.47396	5.004562	-5.09***
Constant	235517.5	67023.77	3.51

Source: Computed from Stata 12 Regression Analysis, 2018.

****Significant at 5%**

*****Significant at 1%**

R^2 0.8276

Adjusted R^2 0.7913

Conclusion

The result of this study shows that oil palm production is profitable and that majority of the farmers still operate their production on a small scale. Oil palm has been a major player in Nigerian export business before independence and will continue to grow and develop the Nigerian economy in recent day Nigeria if adequately considered a major economy builder from the agricultural sector level, a huge employer of labour and a catalyst in the development of the manufacturing industries.

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