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Factors Influencing Economic Performance of Palm Oil Producers in Akwa Ibom State, Nigeria

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ABSTRACT

The study examined the factors influencing economic performance of palm oil production in Abak Local Government Area of Akwa-Ibom State, Nigeria. The study was based on primary data collected with the aid of pre-tested questionnaire from 120 respondents using multistage sampling technique in the study area. Descriptive statistics and multiple regression analysis were used for data analysis. Results revealed that majority (78%) of the palm oil producers were female with a mean age of about 50 years. The costs and returns analysis indicated that palm oil production was a profitable enterprise with a net margin of ₦332,314.50. The result of the regression analysis revealed that age ($p<0.05$), education ($p<0.01$), membership of cooperative society ($p<0.05$), cost of equipment ($p<0.05$) and cost of labour were the significant factors influencing economic performance of palm oil producers in the study area. The major constraints faced by the producers were inadequate capital, lack of credit facilities, lack of access to improved inputs and technology, price fluctuation among others. The study recommended that, government, both at the federal and state levels should make credit facilities available and accessible to the palm oil producers at low interest rate in order to sustain and invigorate their economic performance.

Keywords: Abak, economic performance, palm oil, producers

INTRODUCTION

Palm oil is currently the most consumed edible oil in the world with the palm trees extensively grown in West Africa, Central Africa, South East Asia, South and Central America, with Indonesia and Malaysia being the largest producing countries (Afrinvest 2019). Global production of oil palm increased from 1.2 million MT in 1964 to 73.3 million MT in 2018 with Indonesia (41.5 million MT) and Malaysia (39.5 million MT) accounting for 80.1% of global production between 2016 and 2018 (USDA 2018). In Nigeria, palm tree is found predominantly in southern area especially in the wet rain forests and savannah belt. It also exists in the wet parts of North central Nigeria, in areas like Southern Kaduna, Kogi, Kwara, Benue, Niger,

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Plateau, Taraba and Nasarawa States as well as the Federal Capital Territory (Ayodele & Eshalomi 2010). Two kinds of oil can be processed from oil palm; the red palm oil, extracted from the fibrous layers (mesocarp) of the nuts; and the palm kernel oil, which is obtained from the kernel (Obasi & Kalu 2015).

Palm oil is an edible vegetable oil derived from the mesocarp (reddish pulp) of the fruits of the oil palms, primarily from the African oil palm (*Elaeis guinensis*) and to a lesser extent from the American oil (*Elaeis oleifera*) and the maripa palm oil (*Attalea maripa*) (Obasi *et al.* 2014). It is the world's second major vegetable oil, after soybean with world annual production of fresh fruit bunches approaching 100 million metric tons per year (Ada-Okunngbowa *et al.* 2013). According to the Roundtable on Sustainable Palm Oil factsheets (2009), production of palm oil is more sustainable than other vegetable oils because it consumes considerably less energy in production, uses less land and generates more oil per hectare than other leading vegetable oils - rapeseed, Europe's leading oil, or soybeans. Nigeria was the world's largest producer of oil palm until early 1960s when it relinquished its position to Malaysia and currently Indonesia (USDA 2012; Ini-mfon *et al*. 2013). The country's bulk exports and foreign exchange earnings came from the palm oil and palm kernel trade and accounted for about 43% of global production in the late 1950's and 1960's (USDA 2018). Nigeria's palm oil sector has since witnessed a downward trend with contribution to global market share reducing to 1.4% as at 2018. This trend could be attributed to the fact that palm oil production is in the hands of small scale farmers with continuous use of traditional and crude production methods mostly characterized by small holdings, low productivity, low resource base resulting to low yield per hectare and low income as well as the country's focus on crude oil exploration and export. This culminated into the country's becoming a net importer of the commodity in the 1980's as rising domestic demand exceeds supply with average deficit of 393,000 MT in the last ten years (Ini-mfon *et al*. 2013; USDA 2018).

In Akwa Ibom State, palm produce business first started in the riverine communities of Eket and Ikot Abasi Local Government Areas, attention for palm and kernel oil later shifted to Abak, Ikot Ekpene and Ikono Local Government Areas due to high demand of palm oil at the international markets. Palm oil production is a major economic activity of the people of the state and is mostly carried out by rural dwellers particularly women using traditional techniques (Udoh & Essien 2015). Ibrahim *et al*. (2016) conducted a study on the resource use efficiency in Palm oil production in Abak Local Government Area of Akwa-Ibom State using production function analysis. Empirical results revealed that hired labour, family labour, farm size, chemical, stands and fertilizer were the significant factors influencing palm oil production in the study area. Bello *et al.* (2015) reported that transport costs, high cost of plantation rentals, and poor extraction processes were critical factors inhabiting profitable palm oil production and processing in Udi, Enugu State. From the foregoing, this study attempts to examine factors influencing economic performance of palm oil producers in Abak Local Government Area of Akwa-Ibom State, Nigeria. The specific objectives were to describe the socio-economic characteristics of the palm oil producers in the study area, determine the economic performance of palm oil producers, analyse the factors influencing economic performance of palm oil producers and identify the constraints associated with palm oil production in the study area.

METHODOLOGY

Study Area

The study was conducted in Abak Local Government Area (LGA) of Akwa Ibom State, Nigeria. The LGA lies on co-ordinates 4°59"N and 7°49"E and shares boundaries with Ikono Local Government Area to the north, Essien Udim Local Government Area to the north-west, Etim Ekpo and Ukanafun Local Government Areas to the west, Urak Annam to the south and Uyo Local Government Area to the east. It has an estimated population of 175,741 and occupies a total landmass of 252 square kilometres (AKSG 2014). The climate of the area is characterized by rainy and dry season. Majority of inhabitants are farmers, petty traders, craft makers and civil servants, with palm produce being the major economic activity of the people.

Sampling Technique

A two-stage sampling technique was employed to select the respondents for this study. The first stage was purposive selection of 4 out of 11 wards in the LGA due to the predominance of palm oil production in the wards. In the second stage, 30 palm oil producers were randomly selected from each of the wards making a total of 120 palm oil producers for the study. However, 118 questionnaires were used for data analysis. The remaining two questionnaires were discarded due to incomplete information.

Sources and Methods of Data Collection

The study was based on the primary data obtained from palm oil producers in the study area using an interview schedule with the aid of pre-tested questionnaire. Data were collected on socio-economic characteristics of the palm oil producers, costs and return to palm oil production and constraints to palm oil production in the study area.

Analytical Techniques

The following analytical tools were employed in the analysis;

Descriptive Statistics. Descriptive statistic such as frequencies, percentages, mean and standard deviation were used to describe information on the socio economic characteristic of the palm oil producers as well as the constraints facing the producers in the study area.

Farm Budgetary Analysis. The cost and returns associated with palm oil production was carried out to determine the economic performance of the palm oil producers in the study area. According to Olukosi and Sonaiya (2003), farm budgeting is a detailed physical and financial plan for operating farms for certain period. It enables the estimation of total expenses (costs) as well as various receipts (returns) within a production period. This technique was employed to analyse the net margin of the palm oil business in the study area. The model for estimating farm budgeting is specified as:

$$GM = TR - TVC \qquad [1]$$

Where, GM is the gross margin, TVC is the total variable cost

$$NM = GM - TFC \qquad [2]$$

Where, NM is the net margin and TFC is total fixed cost.

Multiple Regression Analysis. This was used to determine the factors influencing the economic performance of palm oil producers in the study area. The model was explicitly specified as follows:

$$Y = \beta_0 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \mu \qquad [3]$$

Where: Y = palm oil producers' economic performance measured by their net returns (₦), X_1 = Sex (1 if female, 0 otherwise), X_2 = Age (years), X_3 = Educational status (years), X_4 = Production experience (years), X_5 = Household size (number), X_6= Membership of cooperative association (dummy), X_7 = Cost of equipment (₦), X_8 = Cost of labour (₦), μ = random sampling error term, β's are parameters to be estimated. The data obtained were fitted into three different functional forms namely, Cobb-Douglas, semi-log, and linear functions. The best of the 3 functional forms was selected based on: Economic criteria in terms of a-priori expectation of signs of coefficient; Statistical criterion in terms of values of coefficient of multiple determination (R^2), and F-test statistics.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Respondents

The result reveals that majority (78%) of the palm oil producers were female while 22% were male. This implies that palm oil production was dominated by women in the study area. This is an indication that the women folks were entrepreneurs who were economic active and did not depend solely on their husbands for financial support. A larger proportion (43.2%) of the respondents were within the age range of 41-50 years. The mean age of about 50 years implies that the producers were getting old and may find it difficult to cope with the challenges of palm oil production. About 47% of the respondents had primary education, 21.2% had secondary education and 4.2% had tertiary education while 24.6% had no formal education (Table 1). This implies that majority of the respondents were educated. This result agrees with (Ini-mfon *et al*. 2013) that educated palm oil processors have high potential for innovation or technology adoption. Majority (69.5%) of the respondents were married with an average of 9 persons in their households. The large household size could have implication on family labour availability in the study area. The result further reveals that 42.4% of the respondents had between 11 and 20 years of experience in palm oil production, 37.3% had 21 to 30 years' experience and 13.6% had more than 30 years while 8% had 10 years or less experience in palm oil production in the study area. The mean years of experience of 22 years implies that the respondents had gathered a lot of experience overtime which could help in effective management decisions with respect to input combination, labour use and resource allocation in the study area. Furthermore, majority (55.7%) of the respondents employed the services of both hired and family labour in their trade. Majority (78.8%) of the respondents did not belong to any cooperative association. This could have negative effects on growth and expansion of their business. Also, 75.4% of the respondents have not had contacts with extension agents in the last one year which could impart negatively on awareness and innovation adoption in the study area.

Economic Performance of Palm Oil Producers in the Study Area

The result reveals that cost of purchase of palm fruits accounted for 66.3% of the total cost incurred by the palm oil producers (Table 2). This implies that the palm oil producers spent a large chunk of their capital on purchase of palm fruit in the study area. This result corroborates the findings of Uche *et al*. (2017) that cost of palm fruits accounted for about 61% of total cost incurred by palm oil producers in Ikwerre and Etche Local

Table 1 Distribution of Palm Oil Producers by Socio-economic Characteristics N = 118

Description	Frequency	Percentage	Mean	Std. dev.
Sex				
Female	92	78.0		
Male	26	22.0		
Age				
Less or Equal to 30	12	10.2	49.84	8.920
31-40	21	17.8		
41-50	51	43.2		
Above 50	34	28.8		
Educational Status				
None formally	29	24.6		
Primary	55	46.6		
Secondary	25	21.2		
Adult/vocational	4	3.4		
Tertiary	5	4.2		
Marital Status				
Single	8	6.7		
Married	82	69.5		
Widowed	10	8.5		
Divorced	18	15.1		
Household Size				
Less or Equal to 5	16	13.6	9	3.355
6-10	78	66.1		
Above10	24	20.3		
Experience				
Less or Equal to 10	8	6.8	22.46	8.883
11-20	50	42.4		
21-30	44	37.3		
Above 30	16	13.6		
Type of Labour Used				
Family	37	31.4		
Hired	15	12.7		
Both	66	55.7		
Cooperative Association				
No	93	78.8		
Yes	25	21.2		
Extension Contact				
No	89	75.4		
Yes	29	24.6		

Source: Field Survey (2019).

Government Areas of Rivers State. Also, the cost of labour of ₦46,832.00 accounted for 16.4% of the total cost of production in the study area. Moreover, the total variable cost of production was ₦245,768.88, about 86.3% of the total cost while the fixed cost of ₦39,123.85 was 13.7% of total cost of production. The total cost of palm oil production in the study area was ₦284,892.73 and the gross margin was ₦371,438.35. This returns a net margin of ₦332,314.50 which shows that palm

oil production was profitable in the study area. This result agrees with the findings of Emokaro & Ugbekile (2014); Uche *et al.* (2017) that palm oil production is a profitable enterprise in Edo and Rivers States respectively.

Factors Influencing Economic Performance of Palm Oil Producers in the Study Area

The linear function was chosen as the lead equation based on apriori expectation, value of the coefficient of determination R^2, the F-ratio, and the highest number of significant variables. F-ratio value of 12.792 was significant, indicating that the model specification fits the data well. The value of the coefficient of determination R^2 of 0.796 implies that 79.6% of the total variation in the economic performance (net returns) of the producers was accounted for by the independent variables included in the model. The result in Table 3 shows age ($p<0.05$), education ($p<0.01$), membership of cooperative society ($p<0.05$), cost of equipment ($p<0.05$) and cost of labour were the significant factors influencing economic performance of palm oil producers in the study area (Table 3).

The coefficient of age was negative and significant at 5% significant level. This implies that as the palm oil producers increase in age, their performance decrease economically and vice versa in the study area. Older producers are likely unable to do strenuous activities associated with palm oil production on their own and may need to employ helps and this increases total cost of production which in turn, reduces the net returns from their trade. A year increase in the age of the palm oil producers will decrease the net returns from palm oil business by ₦124.354. This result is in line with the findings of Obasi & Kalu (2015) that older palm oil marketers/producers seem to be less receptive of innovative ideas and this affects their efficiency negatively. In the same vein, cost of labour and equipment had negative significant relationship with economic performance of the respondents in the

Table 2 Costs and returns to palm oil production in (₦/production)

Cost Items	Amount (₦)	% of TC
Cost of Palm Fruits	188,880.00	66.3
Transportation	3,676.00	1.3
Labour	46,832.00	16.4
Firewood	4,744.00	1.7
Market charges	880.00	0.3
Miscellaneous	756.88	0.3
Total Variable Cost (TVC)	245,768.88	86.3
Cost of Equipment (Depreciated)	28,407.55	10.0
Rent	10,716.30	3.7
Total Fixed Cost (TFC)	39,123.85	13.7
Total Cost (TC) (TFC + TVC)	284,892.73	
Return		
Total Revenue (TR)	617,207.23	
Gross Margin (GM = TR - TVC)	371,438.35	
Net Margin (NM = GM - TFC)	332,314.50	

Source: Field Survey (2019). (Note: 1$ = ₦360:00).

Table 3 Factors Influencing Economic Performance of Palm Oil Producers

Variable	Linear	Double-Log	Semi-Log
Constant	983.463 (3.164)	0.357*** (3.600)	-0.044** (2.311)
Sex	1.909 (0.109)	0.017 (1.410)	-0.549* (1.997)
Age	-124.354** (-2.009)	0.010 (0.066)	-0.266 (-1.632)
Education	82.344*** (2.654)	-0.033* (-1.718)	-0.148 (1.365)
Experience	18.934 (0.967)	0.057 (0.408)	-0.810 (-0.875)
Household size	11.054 (1.625)	-0.038 (-0.236)	0.030***(2.571)
Cooperative	687.403** (2.473)	0.191** (2.266)	1.280*** (2.768)
Cost of equipment	-35.106** (-2.179)	0.357 (1.600)	0.660 (1.579)
Cost of labour	-60.014** (-2.222)	0.019** (2.110)	-0.000* (-1.905)
R^2	0.796	0.645	0.683
Adj. R^2	0.677	0.599	0.616
F-ratio	12.792	6.345	11.479

Source: Field Survey (2019). ***, **, * significant at 1%, 5%, and 10%.

study area. This implies that as the cost expended in the purchase of equipment and hiring of labour increase, net returns decreases. Increase in labour and equipment cost increase the overhead cost of production which eventually reduces the net returns. A naira increase in the money spent on purchasing equipment and hiring labour decrease net returns by ₦60.014 and ₦35.106, respectively.

Conversely, educational level of the respondents was found to have a direct significant relationship with economic performance in the study area. This result implies that as the number of years of formal education of the palm oil producers increase, the net returns increases too. The result agrees with the report of Ini-mfon *et al.* (2013) that educated processors might be exposed to modern techniques of business management and financial incentives as well as other benefits. Furthermore, membership of cooperative society had a positive significant relationship with economic performance of the palm oil producers at 5% significant level in the study area. This implies that members of cooperative society had better economic performance and realised higher net returns than non-members in the study area. Being a member of the cooperative society for an additional one year will lead to ₦687.403 increase in net returns as membership in a cooperative society encourages information sharing in areas such as processing, marketing, innovation and financial incentives as well as social capital or social networking. All these advantages tend to impact positively on the total revenue and net returns of producers (Ini-mfon *et al*. 2013).

Major Constraints to Palm-Oil Production in the Study Area

The result reveals that inadequate capital as indicated by 99.2% of the respondents was the most pronounced constraint to palm oil production in the study area (Table 4). Inadequate capital couple with high cost invested in the purchase of fresh palm fruits reduce the production capacity of the palm oil producers in the study area. Lack of credit facilities (95.8%) was the next constraint. This hinders the producers from expanding their business, leading to poor economic performance in the study area. The result agrees with Ibrahim *et al.* (2016) that lack of credit facilities confined the

Table 4 Major constraints to palm oil production in the study area

Constraints*	Frequency	Percentage
Inadequate capital	117	99.2
Lack of credit facilities	113	95.8
Access to improved input and technology	111	94.1
Price fluctuation	99	83.9
Inadequate extension contacts	97	82.2
High cost of labour	93	78.8
Poor storage facilities	88	74.6
Lack of government support	83	70.3

Source: Field Survey (2019). *Multiple responses.

palm oil producers to small scale producers who operate at subsistence level.

Access to improved input and technology was the next constraint as reported by 94.1% of the producers. This implies that the palm oil producers still relied on manual and crude methods of production. This result confirms the findings of Udoh & Essien (2015) that continuous dependence on manual and crude tools for production was a major challenge to palm oil production in Akwa Ibom State. Price fluctuation was a major constraint to 83.9% of the respondents who said the price of palm fruits as well as finished products vary with the climatic condition of the area. Inadequate extension contact was a constraint to 82.2% of the respondents. This could have negative effect on timely dissemination of research results, information on innovation as well as awareness level of the respondents. Other constraints include high labour cost (78.8%) poor storage facilities (74.6%) to cater for surplus and lack of government support (70.3%).

CONCLUSION

Based on the findings of this study, it can be concluded that palm oil production is a profitable enterprise capable of generating a net margin of ₦332,314.50 in the study area. However, this enterprise is besieged with a number of constraints such as inadequate capital, lack of credit facilities, lack of access to improved input and technology, price fluctuation among others which impede the economic performance of the producers in the study area. Also, socio-economic variables such as age, cost of equipment and labour were found to reduce the economic performance of the producers while education and membership of cooperative association increased their performance. The study therefore recommends that, government, both at the federal and state levels should make credit facilities available and accessible to the palm oil producers at low interest rate in order to sustain and invigorate their economic performance. Government and non-governmental organisations should also assist in the purchase of modern processing equipment and other inputs for distribution to small-scale palm oil producers at low interest rate to enhance their productivity. Also youth should be encouraged to get involved in palm oil production business as a way of ensuring better economic performance and secure the future of the business as findings from the study revealed that economic performance reduce with age in the study area.

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