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Factors affecting performance of palm oil processors in the South-South Region of Nigeria

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This research assessed the socioeconomic characteristics of palm oil processors and determined factors affecting the performance of the business in Ikot Ekpene area of Akwa Ibom state, southern Nigeria. Thirty (30) oil palm processors were randomly sampled and used for data collection. The analysis of the socio-economic characteristics of processors reveals that respondents were all males who are approaching their old age. Majority of them have some levels of formal education and moderate family size. The OLS regression result showed that farmer's education, experience, membership of a social group, income from other sources, labor cost and initial cost of mills are significant policy variables affecting both on-season and off- season performances (gross margins) of palm oil processors in the study area. Based on the finding, it is recommended that policies which focus on education of farmers or processors will promote performance in the sub sector. Also, Capital intensive method of processing should be introduced as a way to curb the rising cost of labour. In addition, farmers should be encouraged to form cooperatives or other social groups to enable them pool resources that will enhance acquisition of equipment with better efficiency. Organized market for palm oil mill products in Ikot Ekpene area is also strongly advocated.

Keyword: Palm oil, Ikot Ekpene, gross margin, Akwa Ibom, processor.

INTRODUCTION

Nigeria is among the world largest producers of palm oil (CBN, 2012, FAO, 2012 and United State Department of Agriculture, 2012). During the pre-independence period, the country's bulk exports and foreign exchange earnings came from the palm oil and palm kernel trade. Nigeria was the largest producer of palm oil until early 1960s when it relinquished its position to Malaysia and currently Indonesia (United State Department of Agriculture, 2012). The advent of the crude oil in late 1970s distorted government investment in the sub-sector but rather concentrated investment in the fast yielding and emerging petroleum sub-sector. From 1960 till date, the annual productions of palm oil and palm kernel as well as government investment in the sub-sector have been

unsteady and in most years declined (CBN, 2010). For instance, in 2002 the country's palm oil production recorded a zero growth rate compared to Malaysia with 5.9%, Indonesia 11.2% and Columbia 8.8% growth rates (Basiron, 2002; CBN, 2006 and FAO, 2009). Several researchers have adduced the declined role of palm oil sub-sector to the country over dependence on crude oil exploitation, prevalence of traditional palm oil processing techniques and the Nigerian civil war of 1967 to 1970 which was fought in the country's palm oil belt. These events were responsible for the country's inability to meet up with the global demand for palm oil and palm kernel production (EzeUche, 2008 and Onwubuya, 1997). According to Olagunju, (2008) and PIND, (2011), up till 1960 Nigeria's palm oil accounted for 43% of the global palm oil production. Domestic annual production is currently around 900,000 tons (CBN, 2012 and FAO, 2012). Due to the increase in the industrial and domestic

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demand, there is an estimated overall supply gap of between 150,000 and 300,000 tons of technical palm oil (TPO), and 200,000 tons of special palm oil (SPO) much of which is currently met through imports (PIND, 2011 and CBN, 2012). Kei, et al., (1997) and Olagunju, (2008) in their studies observed that, due to the increase in demand for palm oil products, resulting from increase in population and consumer's income growth relative to the low productivity of the oil palm sector, Nigeria has become a net importer of palm oil. This has a serious implication on the country's external reserves and the survival of the domestic palm oil industry.

The palm oil production industry in the country is in the hands of small scale farmers mostly characterized by small holdings, low productivity, low resource base and low income (Udom, 1986). About 80% of production comes from dispersed smallholders' farmers who harvest semi-wild plants and use manual processing techniques. Several smallholders' farmers are spread over an estimated area ranging from 1.65 million hectares to 2.4 million hectares and to a maximum of 3 million hectares in the southern region of Nigeria (Udom, 1986). The prospects for job creation is high as palm oil production remains a major vocation in many rural communities, involving hundreds of thousands of poor producers and tens of thousands of poor processors. The palm oil industry represents one of the most effective avenues for poverty alleviation, food security, ensuring economic stability in Nigeria and providing income for rural poor farmers. It also has the prospects of providing employment for millions of unskilled and semi-skilled people. Palm oil is very important as an income generator for women in Nigeria. In most cases it is women who are in charge of processing the palm oil fruits into red palm oil and selling the product in the local and even international markets. The lack of proper scaling of locally fabricated milling technology adversely affects the extraction rate and volume of palm oil production. Most small holder farms have been poorly maintained in terms of some certain farm activities like weeding, slashing and fertiliser application. Inappropriate fertiliser or chemicals application are common among small scale holders, leading to low yield per hectare.

Akwa Ibom State is one of the states in the southern region of Nigeria that is noted for palm oil production. Currently, the state occupies number one position in palm oil production in Nigeria. Many communities in the state consider palm oil production as a culture rather than a business (Udom, 1986; PIND, 2011 and AKSMOA, 2012). Based on the nature of oil palm business and rapid urbanization as well increase in population in the southern region of Nigeria, land is one of the most limiting factors in the palm oil production business.

It is believed that the palm oil production could be more rewarding should the palm fruits be processed into oil instead of selling as fruits. However, many of the farmers prefer to sell the fruits because of the tedious processing stages, thus the sale of unprocessed fruits results in a loss to the seller and great economic gain to the buyer. Even though the method of processing is tedious as reported by Ukpabi (2004), the gains from the products (palm oil, palm kernel and fibers) compensate the processor for the labour. In some communities, the shelves are used as source of energy for cooking. In Akwa Ibom state, about 90% of palm oil processing is done using traditional techniques. The process involves collection of harvested ripe fresh palm fruit, after which it is threshed. The fruits are them picked and taken to the processing shed for parboiling. The parboiled fruits are pounded, digested, producing a mash from which oil is extracted using local spindle press (Onwubuya, 1997). Those that go into processing use rudimentary methods characterized by inefficient oil extraction capabilities. According to Ojo (2002), the adoption of hytech mills is a welcome development because, apart from its acquisition being within the reach of the average small holder, it ensures increased efficiency in palm oil extraction and high quality palm oil. The major equipment involved is digester, spindle press, axe, spade, shovel, rake, matchet, drums for cooking fruits and classification of oil (Umoh, 2011). Ukpabi (2004), stated that the success or failure of palm oil processing depends largely upon how labour and other resources are efficiently used and that an efficient processing technology increases quality and quantity of food available for consumption. Agboola (1993) and Omoti (2001) added that for the processing techniques to be termed efficient, they should satisfy the need of meeting both growth and sustainability goals in the industry. In their contribution, Jalami et al., (2000) advocated that oil palm processors should embrace well integrated capital intensive, high volume and high extraction rate in the processing method in order to encourage high transformation of palm oil industry in the country. According to Inyiama et al., (2011), several efforts are being made by researchers to involve the ideal palm fruit processing machine (the composite machine) in processing. The principle that guides this machine is that within it, the separation of the fibers and kernel (termed digestion) is followed immediately by the extraction of the oil from the fibers (filtering). The acquisition of these hytech processing mills poses a great challenge to the resource poor rural farmers in our palm oil producing communities.

There are few detailed studies on palm oil processing that have relevance to the subject examined in this work. However, few studies accessed are considerably examined. Omoti (2004) evaluated the profitability of palm oil processing enterprises and determinants of factors that affect the net return to palm oil processors. He employed a multiple regression technique and applied three functional forms namely; linear semi-log and Cobb-Douglas. Double log was selected as the lead equation.

The empirical result revealed that labour cost was a significant negative determinant of net returns. This implied that labour cost had a decreasing impact on the net return of the processors. In another study conducted by Omoti (2001), the author concluded that the primary determinants of a potential processors capability are experience in business and the quality of the information provided by extension staff. In a related work by Olagunju (2008), he analyses the economics of palm oil processing in Southwestern Nigeria. The result of the multiple regression showed that extraction cost and cost of palm fruit were negatively and significantly associated with net return while depreciation of tools and other inputs showed inverse relationship with net return. In contrast no significant relationship was found to exist between net return and such factors as processing experience and cost of labour.

Research objectives

In an attempt to identify ways to upsurge palm oil production in the country, we try to pinpoint important policy variables which will be useful to policy makers in the country. To achieve this, the study specifically examines the socioeconomic characteristics of palm oil mill processors and identified factors that affect their performances in Ikot Ekpene area of Akwa Ibom State, Southern Nigeria. Processor's performance was proxy by the gross margin generated in the business.

RESEARCH METHODOLOGY

Study Area: The study was conducted in Ikot Ekpene Local Government area of Akwa State in the southern region of Nigeria. The area is known throughout Nigeria as "The Raffia City". Ikot Ekpene is located between latitudes 5° 10` and 5° 30` North and longitudes 7° 30` and 7° 45` East. It lies on the North-Western flank of Akwa Ibom State in the South-South region of Nigeria. The area is known as a regional centre of commerce, notable in exports of palm oil and its derivatives, especially various forms of palm oil, kernels, raffia products including raffia fibers and its sweet wine, as well as arable crops such as yams, cassava, taro, and corn. It has a land area of about $125km^2$ or 48sqaure miles and a population of about 225,000 (NPC, 2006 and Umoh, 2001).

Sampling Technique and Size: In this study, our respondents were palm oil processors who owned mini-palm oil mill in Ikot Ekpene local government area of Akwa Ibom state, Nigeria. A two-stage random sampling procedure was used in selecting the respondents; first, fifteen (15) villages were randomly selected from each of the two clans that made up the Local Government area. In the second stage; one palm oil mill owner or processor was randomly sampled from each of the selected villages. A total of 30 palm oil mill owners from thirty villages were selected for the data collection. Data collected covered both on - season and off - season performances. The period of February to May constitute on-season period or peak period while June to January is considered as off-season period or lean period in palm oil processing business.

Analytical Technique: The study employed the concept of gross margin to evaluate the performance of the individual palm oil mill owner or processor in the study area. We prefer the gross margin concept to other performance indicators (profit, quick ratio, net worth ratio etc.) because it is more realistic and easy to capture for this group of farmers/entrepreneurs'. Also, the issue of fixed cost for fixed factors of production was difficult to capture because all the palm oil mill owners also have palm oil estates as well as other businesses. Majority of respondents were unable to account accurately for the cost of land and some other fixed factors of production because of their multi uses. Gross margin was computed for both on-season and off-season operations. A simple Gross Margin formula was used as shown below (Adegeye and Dittoh, 1985);

$$GM = MTR - TVC \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Where;
GM = Oil mill on-season or Off-season Gross margin (₦)
MTR = Mill total revenue measured by multiplying the total output of mill oil in 20 - liter container by the unit cost price + revenue from processed palm oil nuts + revenue from the palm oil debris sold as source of fuel (₦). This was computed for on -season and off-season periods.
TVC=Total variable cost in (₦) ,which includes cost of labour, palm fruit, extraction   charge, fuel, fire wood and water computed for on-season and off-season periods.
The study employed multivariate regression model based on OLS technique to determine factors that affect both on-season and off-season performances (Mill's gross margin level) of the palm oil processors. The implicit form of the model is specified as thus:
$$PE=\beta_0 + \beta_1 AGE + \beta_2 HHS + + \beta_3 EDU + \beta_4 EXP + \beta_5 NOFI + \beta_6 LAC + \beta_7 MAS + \beta_8 MIC + U$$
Where,
PE=Oil mill or processor's performance measured by season's Gross Margin of   individual   mill   or processor (naira) (Note: On-season period starts from February to May and off- season starts from June to January).
AGE=Age of mill owners measured in (years).
HHS =   Household size, measure by the number of the immediate family members EDU   =Formal educa-

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Table 1. Distribution of Respondents According to their Socio-Economic Characteristics.

Characteristics	Frequency	Percentage
SEX:		
Male	30	100
Female	-	-
Total	**30**	**100.00**
AGE:		
20-40	6	20
41-60	12	40
61-80	12	40
Total	**30**	**100.00**
HOUSEHOLD SIZE:		
1-5	5	16.67
6-10	24	80.00
11-15	1	3.33
Total	**30**	**100.00**
EDUCATION:		
No formal education	3	10.00
Primary school	13	43.33
Secondary school	4	13.33
Tertiary	2	6.67
Vocational Training	8	26.67
Total	**30**	**100.00**
MARITAL STATUS:		
Married	29	96.67
widower	1	3.33
Total	**30**	**100.00**

Source: Field survey, 2012.

tion measure by number of years spent in school by the Respondent.

EXP = Experience (No of years spent in the oil mill business) by the mill owner.

OFI = Off-farm income measured by the amount the respondent gained from other income generating businesses (Naira).

LAC = Labour cost (amount of naira spent on hired labour +cost of imputed labour) in naira.

MAS = Membership of a social group in years

MIC = Initial cost of mill (measure by the amount of naira spent on acquiring the milling plant which consisted of fruit sterilizer, axe, cooking pot, digester, spindle press, generator and nut cracker) in naira.

U = error term.

Four functional forms including the linear, exponential, semi log and double log were estimated. The estimation was done for both on-season and off-season performan-

ce of the palm oil mills.

RESULTS AND DISCUSSION

Socio-economic characteristics of mill owners in Ikot Ekpene Area

The analysis of the socio-economic characteristics of the mill owners or processors is presented in Table 1. The result reveals that all respondents were males which are suggestive that the palm oil processing business is strenuous that could only be withstood by men. The result also reveals that only 20% of respondents were in the age category of 20 to 40 years; while 40% each were in the age category of 40 – 60 and 61 – 80 years. The result perhaps suggests that majority of palm oil mill owners in Ikot Ekpene area are aged individuals. Another implication of the result is that palm oil milling business

Table 2. OLS Regression Result of determinant of on-Season Performance of Palm Oil Processors in Ikot Ekpene Area, Nigeria.

Variables	Linear	Exponential	Semi log (L)	Double log
Age	-702.01(-1.047)	-0.0136(-2.153)**	-16866.6(-0.429)	-0.4801(-1.298)
Household size	1580.26 (0.429)	0.040 (1.138)	1466.21(0.056)	0.130(0.530)
Education	3766.06 (2.431)**	0.047 (3.238)***	46813.4(2.668)**	0.482(2.920)***
Experience	2978.11 (1.043)	0.025 (0.911)	28752.6(2.017)*	0.214(1.594)
Other	-0.1504 (-0.665)	-5.7278 e-07(-0.269)	-115.564(-2.985)***	-0.029(-0.280)
incomeLabour	-1.903 (-2.306)**	-1.8772e-05(-2.41)**	-3607.5(-2.985)***	-0.359(-3.159)***
cost	3001.3 (2.785)***	0.0035 (1.985)*	2956.56 (3.679)***	0.512 (1.946)*
Social group	-0.1841 (-1.635)	1.4315e-06(1.261)	-11033.9(-2.483)**	-0.798(-1.910)*
Mill cost	-29188 (-0.447)	10.5(16.982)***	-17349 (-2.731)**	-1.623(0.270)
constant	0.678	0.740	0.824	0.748
R^2	0.576	0.657	0.723	0.656
Adjusted R^2	6.617***	8.934***	7.138***	8.703***
F-cal				

Note: Asterisks *, ** and *** represent 10%, 5% and 1% significance levels respectively. Figures in bracket are t-values. Variables are as defined in equation (2) and (L) means lead equation.

needs experience which is gathered over the years. In addition, the result indicates that about 17% of respondents had sizable family size of between 1 and 5 members. 80% of respondents have 6 to 10 family members while about 3% possessed 11 to 15 family members.

The result showed that most palm oil mill owners in the study area have moderate family size. The result might have an implication on the family labour requirement in palm oil milling business in the area. Furthermore, analysis of the socio-economic characteristic of respondents reveals that about 90% of respondents have some years of formal education. The distribution shows that only 43.33% had primary education, 13.33% went through secondary school, 6.67% pass through tertiary education and 26.67% obtained vocational training. This result suggests that most processors are educated and there is high potential for innovation or technology adoption. Over 96% of the respondents were married which is an indication of the importance of family labour in palm oil milling (processing) business in the study area.

On-season Determinants of Gross Margin or Performance of Palm Oil processor in Ikot Ekpene area, Akwa Ibom state, Southern Nigeria

The Ordinary Least Squares (OLS) estimation of the determinants of on-season performance of palm oil processors in Ikot Ekpene is shown in Table 2. Based on the diagnostic tests and number of significant variables, the semi-log functional form was selected as the lead equation. The R^2 (0.824) of the lead equation indicates that about 82.40% of the total variation in the on-season gross margin (performance) is attributed to the specified exogenous variables. The estimated F- statistic (i.e. 7.138***) for the lead equation is statistically different from zero at 1% probability level; this implies that the estimated R^2 is significant, thus indicating the fitness of the regression equation.

The result reveals that the coefficient of education of the mill owners or processor has a positive significant (5% level) correlation with the on-season performance of the business. This result implies that as the number of the years of formal education of the mill owner increases, the probability of increase in performance increases too. The result perhaps suggests that educated mill owners or processors might be exposed to modern techniques of business management and financial incentives as well as other benefits. This finding is consistent with the findings of Olagunju (2008) which asserted that education plays an important role in palm oil processing business in Ondo state of Nigeria.

The slope coefficient of palm oil processor's experience exhibited positive relationship with respect to the on-season performance of palm oil mill in Ikot Ekpene. The result implies that, increase in experience in palm oil milling business promote performances of the business in the study area. This corroborates the finding of Omoti (2001) who asserted that the primary determinants of a potential processor's capabilities was experience in busi-

Table 3. OLS Regression Result for off- Season determinant of Performance of Palm Oil Processors in Ikot Ekpene area, Nigeria.

Variables	Linear	Exponential	Semi log (L)	Double log
Age	-245.507(-0.472)	-0.018(-1.907)*	21070.1(0.712)	-0.159(-0.339)
Household size	883.501(0.292)	0.078(1.548)	-21819.7(-0.622)	-.041(-.133)
Education	2693.09(2.240)**	0.071(3.336)***	27830.7(2.106)**	-0.533(-2.64)**
Experience	876.508(0.396)	0.002(0.059)	18946.7(17.65)***	0.211(1.242)
Other income	0.161(0.916)	1.278e-o6(0.411)	2915(0.36)	0.029(0.222)
Labour cost	-1.913(-1.863)*	-1.3792e-05(-1.209)	2419(2.66)**	0.308(2.14)**
Social group	1009.6 (1.587)	0.065 (0.965)	78342.8 (5.71)***	0.964 (2.987)***
Mill cost	-0.145(-1.653)*	-1.307e-06(-0.842)	-10225(-3.06)***	-1.242(-2.35)**
constant	-37960.6(-0.750)	9.841(10.949)***	-1652 (-3.454)***	-9.15(-12.09)***
R^2	0.616	0.651	0.887	0.677
Adjusted R^2	0.494	0.540	0.672	0.558
F-cal	3.99***	5.860***	5.955***	5.683***

Note: Asterisks *, ** and *** represent 10%, 5% and 1% significance levels respectively. Figures in bracket are t-values. Variables are as defined in equation (2).

ness and the quality of information provided by extension staff.

Coefficient of membership in a social group has a positive significant relationship with the on-season performance of oil palm processors. The result indicates that one year increase in the social group triggers about ₦2956 increase in the gross margin of processor. Membership in a social group will encourage information sharing in areas such as marketing, processing, innovation or technology and financial incentives a well as social capital or social networking. All these advantages tend to impact positively on the total revenue and gross margin of processors.

Furthermore the result reveals that income from other sources, labour cost, and the initial cost of the mill deteriorates processor's gross margin or performance. About 115 naira, 3607naira and 11033 naira of gross margins are lost for every unit increase in other sources of processor's income, labour cost and mill initial cost respectively. Omoti (2004) has reported similar result for labour cost and other inputs. The result satisfied the *apriori* expectations because increase in the farmer's alternative source of income encourages income and activity diversification; while increase in labour cost increases the total variable cost which eventually reduces the important of the processor's total revenue; also increase in the cost of mill delayed break even point and probably performance of the business

Off-season Determinants of Gross Margin or Performance of Palm Oil mill Owners or processors in Ikot Ekpene, Akwa Ibom State Nigeria

The OLS estimation of the determinants of off-season performance of palm oil mills in Ikot Ekpene is shown in Table 3. Based on the diagnostic tests and number of significant variables, the semi-log functional form was selected as the lead equation. The R^2 (0.887) of the lead equation indicates that about 89% of the total variation in the off-season gross margin (performance) is attributed to the specified independent variables. The estimated F-statistic (I.e. 5.955***) for the lead equation is statistically different from zero at 1% probability level; this implies that the estimated R^2 is significant, thus indicating the fitness of the regression equation.

The estimated result reveals that the slope coefficient of education is positive and significant at 5% probability level. This implies that increase years of formal education of palm oil mill owners increases the off-season performance of the processors. Also, the coefficient of mill owners' experience is positive and significant at 10%, implying that the longer an individual stays in the palm oil mill business, the more knowledge he accumulates to make the business more profitable even in the lean period.

The effect of labour cost on mill performance is positive and statistically significant at 5% probability level. This suggests that at high labour cost, the performance of the palm oil processing business is enhanced during off-season. This result is contrary to the *a priori* expectation. However, this could be explained by the fact that during off-season, many workers who are usually employed in the mills will migrate to urban areas for alternative jobs. This will result to labour shortage and corresponding high wage rate. The implication is that a processor or farmer

must have to pay more to obtain satisfactory man-hours in other to have a reasonable margin or performance. Coefficient of membership in a social group has a positive significant relationship with the off-season performance of oil palm processors. The result indicates that one year's increase in the social group promotes about ₦78342.80 increase in the gross margin of processors. We observe that this off-season margin is higher than the on-season margin; it was attributed to increase in price of palm oil during the lean season. Membership in a social group will enhance good quality market information and price movement awareness. Furthermore, the initial cost of mill has a negative relationship with the mill's or processor performance during the off-season. This means that increase in the initial cost of mill will result in the reduction in performance of palm oil mills processor. This implies that those costs have decreasing impact on the palm oil net return.

CONCLUSION AND RECOMMENDATIONS

The study examined the socioeconomic characteristic of palm oil mill owners or processors and identified determinants of gross margin (used as proxy for mill performance) among them in Ikot Ekpene area of Akwa Ibom state, southern Nigeria. The analysis of the socio-economic characteristics of mill owners reveals that respondents were all males who are approaching their old age. Majority of them have some levels of formal education and moderate family size.

The result of the regression reveals that farmer's education, experience, income from other sources; labor cost, membership in a social group and initial cost of mills are significant policy variables affecting on-season performance of palm oil mills in Ikot Ekpene area of Akwa Ibom state; whereas, farmer's education, experience, labor cost, membership in a social group and initial cost of mills are significant policy variables affecting off-season performance of palm oil mills in the study area.

These findings call for policies which should focus on palm oil processors' education and creating awareness on the modern method of processing. Capital intensive method of processing should be introduced as a way to cope the rising cost of labour. It is also recommended that low cost technology should be developed and used in the palm oil mill processing to cut down the cost of obtaining the present set of milling tools and equipment. Also, farmers should be encouraged to form cooperatives or any social groups to enable them share useful information and pool resources that will enhance acquisition of equipment with better efficiency. Organized market for palm oil mill products in Ikot Ekpene is strongly advocated. This will help to raise the farmer's income and reduce the menace of income diversification among processors in the state. Also, as a way to sustain productivity and the future of the business, youth should be encouraged into the business of palm oil processing in Ikot Ekpene area of Akwa Ibom State, southern Nigeria.

REFERENCES

Adegeye AJ, J S Dittoh (1985). Essential of agricultural economics. Impact publishers Nigeria limited, Ibadan, Nigeria.

Agboola AA (1993). Farming systems in Nigeria. In fundamentals of Agriculture Edited   by E. A. Aylari , M. O. Abatan, E. O. Lucas and O. A. Akinboade. http//www.ijaerd.lautechaee.edu.com.

Akwa Ibom State Ministry of Agriculture (AKSMOA): end Quarterly appraisal Bulletin, 2012 Pg 4.

Basiron, J (2002). Palm oil and its Global supply and Demand prospects. Oil palm industr. Econ. J. Vol. 2 (1) page 3.

Central Bank of Nigeria (CBN), Statistical Bulletins 2006, 2010   and   2012. http://www.cenbank.org/.Retrieved 10-12-2012.

Eze-Uche (2008). Indonesia produces more palm oil than Nigeria–politics– Nairaland.http://www.Nairaland.com/70151/disgrace-countries-like-indonesia produce. p. 1.

FAO Corporate Document on agricultural output in the world   (2009)   and   (2012). http://www.fao.org/index_en.htm. Retrieved 10-12-2012.

Inyiama HC, Okezie CC, Okafo IC (2011). Digital control of palm fruit processing using   ROM   Based Linked State machines. European Journal of Scientific Research   ISSN1450 -216 x Vol. 59 (4) pages 1-9 © EuroJournals.Publishing,   Inc   2011 http://www.eurojournals.com/ejsr.htm.

Jalami BS, Ariffion D Chan ,   KW (2002). Malaysia's contribution to improving the   value and use of palm oil through modern technologies in Burotrop Bulletin 19 p. 25.

Kei K, Mywish M, Duncan B (1997). "Transformation Versus Stagnation in the Oil   Palm   Industry: A Comparison between Malaysia and Nigeria". Staff Paper 97-5. Department of Agricultural Economics Michigan State University, East Lansing, Michigan 48824 p 19.

National Population Commission (NPC), 2006 National Census Data. www.population.gov.ng/. Retrieved 10-12-2012.

Olagunju FI (2008). Processing of palm oil in South Western Nigeria. Int. J. Agric. Econ. Rural Dev., *1(2): 69 – 77. 2008.*

Omoti U (2001). The future of the oil palm industry in Africa and strategies   for   Development. The Nige-rian situation". Paper prepared for the Africa Developme-

nt Bank (ADB) workshop on the future of oil palm industry in Africa and strategies for Development Cote D' Ivoire.

Omoti U (2004). Problems and prospects of oil palm Development processing and potentials in Nigeria, paper prepared for African Investment and Development Agency Conference on attracting private Foreign investment into Nigeria's oil palm industry, Kuala Lumpur, December, 2004.

Onwubuya II (1997). Oil Palm (Elaeis guineensis JACQ), Development in Nigeria with particular reference to the Southeast Agroecological zone. Invited paper read at the workshop on eco-regional programme for the Humid and Sub-humid tropics of Sub- Saharan Africa. Imo Concorde Hotel, Owerri, Nigeria, October 6.

PIND (2011). A report on palm oil value chain. Analysis in the Niger Delta. Foundation for partnership initiative in the Niger Delta (PIND). http://docs.google.com/viewer.

Udom DS (1986). "Nigerian government policy schemes for small holders oil palm planting and rehabilitation between 1978-1981" J. Niger. Institute for oil palm Res. pp. 134 -175.

Ukpabi UJ (2004). Sustainable post Harvest Technologies for major food crop and flesh. A paper presented at the workshop for Abia State Agricultural Officers. NRCRI, Umudike. 10 -12th May. pp. 1 – 13.

Umoh IF (2001). A comparative study of mechanical and traditional oil palm processing in Ikot Ekpene Local Government Area of Akwa Ibom State. An unpublished B. Agric project. Dept of Agric. Economics and Extension, University of Calabar.

United State of America Department of Agriculture report, 2012.