

Analysis of the Socio-Economic Characteristics of Female Oil Palm Processors in Ogo-Oluwa Local Government Area of Oyo State, Nigeria

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Abstract

This study evaluates the socio-economic characteristics of female oil palm processors in Ogo-oluwa Local Government area of Oyo State, Nigeria. It specifically identifies level of involvements of women processors, various technologies employed in processing palm oil and other palm products, constraints encountered by women processors while processing and effect of their socio economic characteristics on their outputs. A multistage sampling technique was used to obtain primary data from 100 respondents using a well-structured questionnaire. The data collected were analyzed with the use of descriptive statistics, such as frequency count, percentage, mean, 4 and 5 points Likert scale and inferential statistics such as chi-square and regression analysis. It was observed that 71% of the respondents were married with moderate household size. The major technology used by the respondents for processing are cooking drum and pounding machines. Lack of fund, transportation, inadequate technical training support and marketing are the common constraints encountered by the respondents. The result of inferential statistics revealed that there was a significant relationship ($P \leq 0.01$) between the respondents' educational level and their technology use. The coefficient of age was in line with the a priori expectation that oil palm processing involves the use of energy. Also, the annual output of the respondents had significant effects on their income ($P \leq 0.05$). It was concluded more extension agents should be involved in disseminating information to the women to combat the effects of low educational status of the respondents. Therefore, the study recommended that access to extension services should be provided in order to increase the accessibility of quality information, encouragement of gender equality in the accessibility of technical support, provision of adequate funds or soft loan and government should subsidize oil palm processing machines.

Keywords: Female processor, oil palm, socio-economic characteristics, technology, usage

1.0. Introduction

Oil palm (*Elaeis guineensis*) is one of the most commonly grown fruit crops, vegetable oil crops, extracted from the palm fruits and globally used for food and raw material as a source of livelihood for millions of people in the world (Adebo, Ayodele and Olowokere, 2015; USDA, 2006). Oil palm is widely grown in over 24 States and covers almost 24 million hectares of land of the country with the aid of extensive research inputs and good ecology (Onwusiribe and Okpokiri, 2015). There is no part of the oil palm that is a waste. Some of the products extracted from oil palm are palm oil for cooking and industrial use, palm kernel cake for feeding livestock. The leaves are used for making brooms, roofing and thatching, basket and mats. The thicker leaf stalks are used for walls of village huts, the bark of the palm frond is peeled and woven into baskets (Adetola, 2015). According to Adelekan et al. (2002), palm oil is the principal source of much of the edible oil consumed in Nigeria and the rest of the West African regions. He further explained that extracted oil can be used in the manufacture of soaps, margarine and, candles. Other uses of palm oil include its use in the manufacture of baking fats, tin plate and sheet steel materials.

Nigeria was a leading exporter of palm kernel, and largest producer and exporter of oil palm accounting for about 43-

45 percent of global oil palm production (Adetola, 2015). Export of cash crops such oil palm contributed significantly to the economy of Nigeria prior to the crude oil boom of the late 1960 (Onwusiribe and Okpokiri, 2015). But due to over-reliance on traditional production techniques, excessive tapping of palm tree for palm wine and the civil war in 1967-70 which were more intense in areas where oil palm cultivation activities were pre-dominant, hampered Nigeria's output supply of palm oil. Nigeria is now a net importer of palm oil. The domestic palm oil produced about 930,000 MT in 2014. The consumption of palm oil in Nigeria amounts to about 2 million MT per annum (Adetola, 2015). According to Emeifele (2015), there has been many narratives over the years and in recent times on what led to this downward trend, with blames being apportioned by different parties along the palm oil value chain. This poses a very precarious situation for the manufacturing sector that depends largely on palm oil as a major source of raw material. Nigeria today produces only 1.7 percent of the world's consumption of palm oil which is insufficient to meet its domestic consumption which stands at 2.7 percent (Adetola, 2015). According to Vegetable and Edible Oil Producers of Nigeria (VEOPAN, 2009), palm oil production provides jobs for at least 1.8 million Nigerians. Because the local production is

not up to demand, Nigeria at present does not export palm oil. The local shortfall is being supplemented by imports from countries such as Malaysia and Indonesia. Often women's opinions are ignored when research priorities are set and their needs are, thus, not addressed even though women are to be highly involved in agricultural activities (Adekanye, 2004). Food and Agriculture Organization (1996) stated that female labours are more productive than the male labours in food processing and that women account for more than half of the labour force in oil palm processing. But for the fact that women contribute immensely to socio-economic development of the rural areas with less authority and opportunity than men implies that the socio-economic constraints militating against their efficient resource management must be fully understood. However, it was on this background that the study was carried out to evaluate the socio economic characteristics of female oil palm processors in Ogo-oluwa Local Government Area of Oyo State. The specific objectives were to; identify their level of involvement in oil palm processing, the various technologies used in processing and constraints encountered. Also the hypotheses of the study were there is no significant relationship between educational level and usage of technologies. The socio-economic characteristics have no significant effect on their outputs.

2.0. Materials and methods

2.1. The study area

This study was carried out in Ogo-oluwa Local Government Area of Oyo State, Nigeria. The LGA headquarter is situated in Ajawa town, few kilometers away from Ogbomoso. Ogo-Oluwa Local Government was created on the 3rd of May, 1989 by the then Military regime of General Ibrahim Badamosi Babangida. The Local Government Area shares boundaries in the east with Ejigbo Local Government Area of Osun State, in the south with Oyo East and Afijio Local Government Areas, in the north with Ogo-Oluwa west Local Council Development Area and in the west with Oriire Local Government Area. The total population of this area is approximately 65,184, covered an area 369 km² at the 2006 census, lying between Longitude 7°23'147"N and 3°55'10'E and 6°31'E (NPC, 2006).

2.3.1. Chi Square analytical tool

Chi-square Analysis was used to test the H₀₁ hypothesis if there is any significant relationship between the educational level of respondents and the usage technology.

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

2.3.2. Multiple regression analysis

Regression analysis was used to determine the effect of socio economic characteristics on the net income of the processors. The multiple regression model was applied

Linear function

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + e$$

Semi Log Function

The study area experiences both dry and rainy seasons and it commences from March to October while dry season commences from November to February. The area is characterized by an annual rainfall of about 2,000mm - 2,500mm and high humidity of 80% - 95% at rainy season and 60% or less at dry season. The soil type in the zone is well drained but highly leached. These elements favour the cultivation of crops such as cassava, maize, sorghum, yam, rice, cocoyam and beans. The major languages speak in the study area are Yoruba while the major occupation of the people are farming. The study area was purposively chosen due to high concentration of oil palm production.

2.2. Sampling technique: A total of 100 respondents from Ogo-Oluwa Local Government area were selected using a multistage procedure, and a well-structured questionnaire to elicit information from the respondents. Ogo Oluwa Local Government was randomly selected out of the 33 Local Governments Area in Oyo state as the first stage. The second stage involved the purposive selection of two communities, Ajaawa and Iwoate chosen due to the high concentration of palm oil processors in the area. The final stage was the random sampling of 50 female palm oil processors from each community. Thus, a total of 100 respondents were sources of primary data collected. Data were collected on socio economic characteristics such as age, marital status, level of education, household size, membership of social association, annual income etc. information were also collected on their level of involvement in oil palm processing, usage of technologies, constraints encountered and the effects of technology usage on their socio economic characteristics.

2.3. Methods of data analysis: Data were analyzed using descriptive statistics such as frequencies distribution and percentage to describe the socio economic characteristic of the respondents. Likert scale rating, mean and ranking were used to rank their level of involvement in oil palm processing, technology usage and constraints encountered. Chi square and multiple regression analysis were used to test the effects of technology usage on the social economic characteristics of the respondents.

using three functional forms namely, linear, semi-log and Double log.

$$Y = a + b_1 \log x_1 + b_2 \log x_2 + b_3 \log x_3 + b_4 \log x_4 + b_5 \log x_5 + b_6 \log x_6 + b_7 \log x_7 + b_8 \log x_8 + b_9 \log x_9 + b_{10} \log x_{10} + e$$

Double Log Function

$$\log Y = a + b_1 \log x_1 + b_2 \log x_2 + b_3 \log x_3 + b_4 \log x_4 + b_5 \log x_5 + b_6 \log x_6 + b_7 \log x_7 + b_8 \log x_8 + b_9 \log x_9 + b_{10} \log x_{10} + e$$

Where,

Y = output per year, x_1 = age of farmers, x_2 = religion, x_3 = marital status, x_4 = household size, x_5 = household head, x_6 = educational level, x_7 = social status, x_8 = extension visit, x_9 = farming experience, x_{10} = income

3.0 Results and discussion

3.1. Socio-economic characteristics of the respondents

The result in Table 1 shows the distribution of respondents based on their socio-economic characteristics. Only 29.00% of the respondents were between the ages of 35-44 years, 28.00% were between the ages of 45-54 years, 18.00% were between the ages of 55-64 years, 14.00% were between the ages of 65-74 years, while 9.00% of them were less than 35 years and 2.00% were above 75 years. It could be deduced from the findings that a good number of the respondents are less than 50 years. It implies that most of the women involved in palm oil processing were still in active age, this is expected because oil palm processing is laborious and will require energy, which the old women might not be able

to do.. About 71.00% of them were married, 14.00% were widowed while 5.00% were divorced, and the remaining 7.00% of them were separated. s. The mean household size of the respondents was 7.2 persons. It shows that most of the women were married with large household sizes. It agrees with the findings of Adebo, Ayodele, and Olowokere, (2015) that most of the women involved in oil palm processing in Ekiti state were young and married but with a large household sizes. Majority of the respondents (69.0%) had a low educational status, which might limit their level of adoption of modern processing techniques that could enhance their productivity.

Table 1 Socioeconomic characteristics of the respondents

Variables	Frequency	Percentage (%)
Age (Years)		
Less than 35	9	9.00
35-44	29	29.00
45-54	28	28.00
55-64	18	18.00
65-74	14	14.00
Above 74	2	2.00
Marital Status		
Single	3	3.00
Married	71	71.00
Widowed	14	14.00
Divorced	5	5.00
Separated	7	7.00
Household Size		
1-5	45	45.00
6-10	51	51.00
11-15	4	4.00
Educational Level		
No formal education	20	20.00
Adult education	9	9.00
Primary education	40	40.00
Secondary education	25	25.00
Tertiary education	6	6.00

Source: Field survey, 2016.

3.2. Level of involvement of respondents in Palm oil processing

The results in table 2 revealed the distribution of respondents based on their level of involvement in palm oil processing. The level of involvement of the respondents was subjected into eight variables and efforts were made to classify the variables into their level of importance or significance using 5 points Likert scale. It is important to

note that the criterion mean point for these variables was 3.0 and this was used as the benchmark. Therefore, any variable found to be lesser than the criterion mean point (3.0) were considered as less important while the variables found to be equal or above the criterion mean point were regarded as very important and they were ranked according

to the level of importance. Seven variables were important or relevant to their level of involvement in palm oil processing while only one variable was less important to their level of involvement in palm oil processing.

However, most of the respondents were involved in heating process with the mean score point of 4.84 and it was accorded first position followed by cooking ($\bar{x} = 4.69$), blending ($\bar{x} = 4.68$), pressing ($\bar{x} = 4.62$), separation of the fibre ($\bar{x} = 4.52$), separation of the dirt ($\bar{x} = 4.41$), loosening ($\bar{x} = 3.73$) and were accorded 2nd to 7th positions respectively.

Table 2. Respondents' level of involvement in Palm oil processing

Level of involvement	Very much	Much	somewhat	Little	Not much	Total	Mean	Rank
Harvesting	25	20	0	180	0	225	2.25	8 th
Loosening	70	228	57	16	2	373	3.73	7 th
Separation of dirt	250	168	21	2	0	441	4.41	6 th
Cooking	355	108	6	0	0	469	4.69	2 nd
Blending	360	68	18	10	0	468	4.68	3 rd
Pressing	335	116	9	2	0	462	4.62	4 th
Separation of fibre	330	92	27	2	1	452	4.52	5 th
Heating	430	48	6	0	0	484	4.84	1 st

Source: Field survey, 2016.3.3.

Usage of technology by the respondents

The results in Table 3 revealed the distribution of respondents based on the usage of technologies. Four technologies were identified by the respondents and they were distributed based on the usage of these technologies. It was observed that the most common method used by the respondents was cooking with mean score points of 4.06 and was accorded the first position. Follow by the use of pounding machine, separator machine and presser machine

with means score points of 3.49, 1.86, 1.34 and were accorded second to fourth positions respectively. It shows that cooking method and usage of pounding machine were significant. This might result from their low levels of education and financial statuses. This was similar to the findings of Akangbe *et al.* (2011) and Oke (2002) that palm oil production was predominantly traditional practices except where digesters were used.

Table 3. Usage of technology by the respondents

Usage of Technology	Very often	Often	Sometimes	Rarely	Not at all	Total	Mean	Rank
Cooking	150	172	54	28	2	406	4.06	1 st
Pounding machine	115	164	48	4	18	349	3.49	2 nd
Presser	15	16	3	16	84	134	1.34	4 th
Separator machine	30	20	36	48	52	186	1.86	3 rd
Complete machine milling	0	0	0	0	100	100	1.00	5 th

Source: Field survey, 2016.

3.4. Constraints to Oil palm processing

Table 4 shows the distribution of respondents based on the constraints encountered in oil palm processing. Majority (99.00 percent) of them indicated that they did not have access to information followed by lack of fund (97.00 percent), poor marketing (95.00 percent), seasonality of products (95.00 percent), transportation network (88.00 percent), lack of training (87.00 percent), discrimination against technical support (77.00 percent), and household welfare (76.00 percent). It was also observed that most of

them encountered discrimination against loan accessibility (72.00 percent), and demands for financial need (65.00 percent). This affirms that, the major constraints encountered by the female oil palm processors were funds, inadequate technical information, marketing and transportation. The results were similar to the findings of Ekunwe *et al.* (2009), that inadequate finance as one of the most serious constraint facing palm oil processors in Edo State.

Table 4: Constraints to Oil palm processing

Constraints	Frequency	Percentage
Transportation problem	88	88.00
Lack of funds	97	97.00
Poor marketing	95	95.00
Pest and diseases	77	77.00
Time constraints	95	95.00
Lack of information	99	99.00
Lack of training	87	87.00
Discrimination against technical support	77	77.00
Discrimination against access to loan	72	72.00
Pressure from husband	72	72.00
Demanding financial needs	65	65.00
Welfare of children	76	76.00

Source: Field survey, 2016,

*Multiple responses

3.5 Relationship between the usage of technology and their level of education

The results in Table 5 shows the relationship between the level of education of the respondents and the usage of technology. The calculated χ^2 was 8.716 while the P value 0.003 and this is significant at 1.00 percent level of significance. This simply means that the null hypothesis was rejected and an alternate hypothesis was accepted. That is, there was a significant relationship between the educational

level of the respondents and their technology usage. This implies that the level of education of the respondents had effects on the adoption of oil palm technologies. This corroborates the finding of Nenna and Ugwumba (2012) who asserted that education is important in creating positive mental attitude towards adoption of modern technology.

Table 5 Chi-square analysis showing the relationship between the respondents' educational level and technology usage

	Calculated χ^2	Df	P value	Decision
<u>Educational level* usage of technology</u>	<u>8.716</u>	<u>1</u>	<u>.003</u>	<u>Significant</u>

Source: Field survey, 2016.

3.6. Effect of socioeconomic characteristics of respondents on their output

The results in table 6 revealed the relationship between the social economic characteristics of the respondents and their outputs. The double log function was used as the lead equation since it has the largest R^2 of 0.929 which is approximately 93.00 percent. This shows that the variations in the explanatory variables have a combined effect of 93.00 percent on the output of the respondents. The estimated coefficient of marital status, educational level, social status, and years of experience were positively related with the output but not significant. This implies that an increase in any of the explanatory variables will increase the outputs of the respondents. The estimated coefficient of age, religion, household size, household head and frequency of extension visits were negatively related with the output of the respondents. This implies that increase in any of these

variables, will lead to a decrease in the outputs of the respondents. The coefficient of age was in line with the *a priori* expectation that palm oil processing involves the use of energy. However, that of household size was contrary to the *a priori* expectation that the size of household will determine the number of labour that was involved in oil palm processing to enhance their output. It was also observed that the income of the respondents had a significant contribution to their output. Since the R^2 is 0.929 (approx 93%) this implies 93% of the variations in output realized by the respondents were explained by the independent variables while the remaining 7% was due to error terms. The F-statistic with value of 66.838 was significant and this confirms the overall significance of the regression analysis.

Table 6 Effect of socioeconomic characteristics of respondents on their output

Variables	Linear function		Semi log function		Double log function	
	Coefficient	T value	Coefficient	T value	Coefficient	T value
(Constant)	28.065	2.155	-168.042	-2.723	-9.312	-7.590
Age	-.354	-1.904	-18.759	-1.224	-.207	-.681
Religion	-.369	-.155	-2.298	-.347	-.088	-.669
Marital status	-.340	-.198	1.545	.164	.018	.0960
Household size	.031	.052	2.352	.358	-.219	-1.671
Household head	-5.006	-1.515	-8.554	-1.019	-.141	-.848
Educational level	.727	.538	8.982	.826	.020	.0930
Social status	- 2.527	-1.623	-1.044	-.147	.005	.0340
Income	.001	13.288*	25.593	7.159*	1.315	18.499*
Frequency of extension visit	-.580	-.429	-2.353	-.330	-.162	-1.143
Years of experience	.498	1.742	4.551	.808	.111	-1.143
R^2	0.763		0.703		0.929	
F-statistics	28.630		12.098		66.838	

4.0. Summary, conclusion and recommendations

The major technologies used by the respondents for processing were cooking drums and pounding machines. Lack of funds, transportation, inadequate technical training supports and marketing were the common constraints encountered by the respondents. There was a significant relationship between the respondents' educational level and the usage of technology. The coefficient of age was in line with the *a priori* expectation that oil palm processing involves the use of energy. The annual output of the respondents had significant effects on their income. It

was therefore recommended more extension agents should be involved in disseminating information to the women to combat the effects of low educational status of the respondents. The women should be encouraged to key to the Npower programme of the federal government to access more funds for oil palm processing. The government and Non-governmental organizations should provide oil palm processing machines to women farmers at a subsidized rate.

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