# Determinants of Profitability and Problems Encountered by Women Palm Oil Processors in Ogbomoso Agricultural Zone of Oyo State, Nigeria

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***Authors' contributions***

*This work was carried out in collaboration between both authors. Author YEA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author JAF managed the analyses of the study and managed the literature searches. Both authors read and approved the final manuscript.*

***Article Information***

**Short Research Article**

## ABSTRACT

**Aims:** The study described the socio-economic characteristics, examined the determinants of profitability and identified the problems encountered by respondents during palm oil processing.
**Place and Duration of Study:** The study was conducted in Ogo- Oluwa, Surulere and Oriire Local Government Areas, Ogbomoso agricultural zone, Oyo State, Nigeria between March 2016 and June, 2016.
**Methodology:** A multistage sampling technique was used to select one hundred and twenty respondents from Ogo-Oluwa, Surulere and Oriire Local Government Areas in Ogbomoso Agricultural zone. Structured questionnaire coupled with interview schedule were used to elicit data. Analytical tools were descriptive statistics and linear regression.
**Results:** The findings showed that 69.16% of the respondents fell within 20-50 years, about 87.5% were married and 72.50% had formal education. About 83.00% had their source of capital from

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personal savings and 96.66% engaged in other occupation. Selected variables determined profitability as shown by regression analysis.

**Conclusion:** Highest qualification, membership of association, ownership of oil palm plantation and quantity of palm oil produced determined profitability while water scarcity, transportation, finance and market instability were the problems faced by respondents.

## 1. INTRODUCTION

Oil palm (*Elaies guineensis*) is one of the most important oil crops in Nigeria [1]. It originated from West Africa within the tropical rainforest and it is indigenous to the Nigerian coastal plains [2]. It is also referred to as crop with multiple economic importance which is prone to genetic, age, agronomic environmental and processing factors [3]. Oil palm is made of essential components namely; the fronds, the leaves, the trunk and the roots which are used for several purposes ranging from palm oil, palm wine, broom and palm kernel cake. One major way of obtaining the economic values of oil palm is processing the palm fruits to palm oil and other products [4]. Nigeria was the world largest palm oil producer, accounting for the 43% of global production uptill 1960s. However, over reliance on traditional method of production and civil war between 1967 – 1970 contributed to the inability to meet up with the increasing demand for palm oil globally by Nigeria [5]. The discovery of petroleum in the late 1950s and its exploitation and exportation in the early 1970s changed the economic scenario in favour of crude oil as the chief revenue earner for the nation [6].

Rural women farmers play a vital role in food production and food security. They account for the 70% of agricultural workers, 80% of food producers, 100% of those who process basic foodstuffs and they undertake between 60% - 90% of the agricultural product marketing [7]. Women take part actively in farming activities and processing farm products in addition to their domestic and reproductive responsibilities [3]. Many of these activities are not defined as "economically active employment" in national accounts but they are essential to the well-being of rural households. Now that Nigeria plans to regain its lost leadership position in palm oil production [8] and the fact that women contribute immensely in the development of the socio-economic of rural areas coupled with their traditional roles of child bearing, home management, etc. It is therefore, expedient to know the benefits derived by women in their palm oil production activities. There is need to strengthen their ownership and control of economic and natural resources to better their lot and improve women livelihood especially in rural areas.

## 2. METHODOLOGY

The study area is Ogbomoso Agricultural Zone of Oyo State, Nigeria. A multistage selection method was used as the sampling technique. Firstly, three Local Government Areas out of the five local government areas in Ogbomoso Agricultural zone of Oyo State were selected due to their rurality and concentration of women palm oil producers (i.e. Ogo-Oluwa, Oriire and Surulere LGAs). Secondly, two villages were randomly selected from each Local Government Area list of villages, making a total of six villages across the three local government areas. Thirdly, random sampling of twenty women palm oil producers from each village, making a total of one hundred and twenty respondents. The villages were Odo-Oba, Ajaawa (Ogo Oluwa LGA), Iresadu, Oko (Surulere LGA), Fapote and Ahoro Dada (Oriire LGA). Structured questionnaire coupled with interview schedule were used to elicit information from the respondents. The analytical methods employed in the study were descriptive statistics (tables, frequencies and percentages) and regression analysis as adopted by various authors [2,9].

### 2.1 Linear Regression Model

Regression analysis is a statistical tool for the investigation of relationships between variables. Linear regression analysis were used to determine which socio-economic characteristics contributed significantly to average revenue of the respondents

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 \ldots\ldots b_{10}x_{10} + \ell \ldots \quad (i)$$

Where:

Y = Average Revenue of palm oil processor
b = coefficient
$x_1$ = Age of Respondents (Years)
$x_2$ = Marital status
$x_3$ = Highest Qualification

$x_4$= Year of Experience (Year)
$x_5$= Association
$x_6$= Source of Land
$x_7$= Ownership of Oil palm plantation (ha)
$x_8$= Source of palm fruits (dummy variable)
$x_9$ = Residue of palm fruit (dummy variable)
$x_{10}$= Quantity of palm oil (litre)
$\ell$ = Error term

## 3. RESULTS AND DISCUSSION

### 3.1 Respondents Socio-economics Characteristics

The results of the socio-economics characteristics in Table 1, showed that 69.16% of the respondents were within the mean age of 35 years. The implication of the result is that majority of the respondents were in their active working age and they were able to undergo various tedious activities involved in palm oil production [10]. About 87.5 percent of the respondents were married and others were separated and widowed. This implies that most of the respondents were responsible at home and they could use their gains in caring for their children. Also, their family members especially their children could assist them in their production activities, thus enhancing their productivity [11]. Majority (72.50%) of the respondents had formal education. The implication is that, their level of education might have impact on their level of production and adoption of new technology [11]. The fact that the respondents completed one form of formal education or the other (primary, secondary and higher educations) would enable them to seek useful sources of information on technologies which can enhance their productivity [11]. About 83.00% had their source of capital from personal savings. This implies that majority of the respondents means of production and expansion is only limited to their own source. Thus, the reasons for this may be as a result of lack of collateral security, fear of market instability and bottlenecks involved in loan processing. The result also showed that 65.83% of the respondents owned oil palm plantation, 34.16% did not have oil palm plantation. The result also showed that 60.84% of the respondents have oil palm plantation that are less that 1hectare. The implication of this result is that most of the

**Table 1. Socio-economics characteristics of respondents**

| Variables | Frequency | Percentage (%) |
|---|---|---|
| **Age** | | |
| 20 – 30 | 7 | 5.8 |
| 31 – 40 | 24 | 50.00 |
| 41 – 50 | 52 | 43.33 |
| 51 – 60 | 25 | 20.83 |
| Above 60 | 12 | 10.00 |
| **Total** | **120** | **100.00** |
| **Marital status** | | |
| Married | 105 | 87.50 |
| Separated | 1 | 0.83 |
| Widowed | 14 | 11.67 |
| **Total** | | **100.00** |
| **Religion** | | |
| Christianity | 95 | 79.17 |
| Islamic | 25 | 20.83 |
| Traditional | 0 | 0.00 |
| **Total** | **120** | **100.00** |
| **Years of experience** | | |
| 1 - 10 | 23 | 19.17 |
| 11 – 20 | 37 | 30.83 |
| 21 – 30 | 27 | 22.50 |
| 31 -40 | 20 | 16.67 |
| Above 40 | 13 | 10.83 |
| **Total** | **120** | **100.00** |
| **Association** | | |
| No Association | 44 | 36.67 |
| Co- operative Society | 42 | 35.00 |
| Farmers' Association | 10 | 8.33 |
| Others | 24 | 20.00 |
| **Total** | **120** | **100.00** |

| Variables | Frequency | Percentage (%) |
|---|---|---|
| **Other occupation** | | |
| Farming | 80 | 66.66 |
| Trading | 30 | 25.00 |
| Civil Service | 6 | 5.00 |
| None | 4 | 3.33 |
| **Total** | **120** | **100.00** |
| **Source of capital** | | |
| Personal | 99 | 82.59 |
| Friends | 12 | 10.00 |
| Relatives | 3 | 2.50 |
| Co-operative | 4 | 3.3 |
| Financial Institution | 2 | 1.60 |
| **Total** | **120** | **100.00** |
| **Ownership of palm oil plantation** | | |
| Owned Plantation | 83 | 69.16 |
| No Plantation | 37 | 30.83 |
| **Total** | **120** | **100.00** |
| **Sources of palm fruits** | | |
| Personal | 59 | 49.17 |
| Other Farms | 37 | 30.83 |
| P. Farms and Others | 24 | 20.00 |
| **Total** | **120** | **100.00** |
| **Source of land** | | |
| Inherited | 89 | 74.16 |
| Brought | 5 | 4.17 |
| Rent | 17 | 14.17 |
| Gift | 4 | 3.33 |
| Borrowed | 5 | 4.17 |
| **Total** | **120** | **100.00** |
| **Residues of palm fruits** | | |
| Sold | 114 | 95.00 |
| Processed to other Products | 5 | 4.17 |
| Disposed as Waste | 1 | 0.83 |
| **Total** | **120** | **100.00** |

*Source: Own Computation, 2016*

respondents were small farm holders who deal only in small surpluses. This may be due to the fact that oil palm plantation required substantial capital to establish and maintain [12]. The result showed that 74.16% of the respondents inherited their farm land through their husband lineages. Thus, there is limitation to the extend of their right on the land use and the size of land cultivated is usually small, due to excessive land fragmentation. The result showed that 49.17% of the respondents harvested their palm fruits from their personal farms, 30.83% got palm fruits from other farms because they do not have oil palm plantation or due to immaturity of their personal palm fruits. Moreover, 20.00% of the respondents process palm fruits from their personal and other farms.

## 3.2 Determinants of Profitability of Respondents

Table 2 showed the result of regression analysis of the determinants of profitability of the respondents. The perceived factors (independent variables) were selected from socio-economic characteristics of the respondents and the average revenue as the dependent variable. The adjusted R – squared (0.9760) showed that 97.60% of the explained variation in the average revenue (Y) is due to the joint effects of the independent variables ($x_1$ to $x_{10}$) and the remaining 2.40% unexplained may be due to certain variables of interest not included in the model but present in the error term. The results showed that highest qualification, membership of association, ownership of oil palm plantation and quantity of palm oil produced were significant at 1%. The implication of the result is that the educational level of the respondents contributed immensely to their processing activities and they were able to make use of improved methods of oil extraction from the palm fruits, thus resulting in high profitability. Also, the respondents who were members of one association or the other (especially palm oil producers association) derived certain benefits which enhanced their profitability. Moreover, those producers with personal oil palm plantation were able to make

more profit than others because they harvested palm fruits directly from their farms, their costs of production were minimized in terms of raw material, labour and cost of transportation. Lastly, the more the quantity of palm oil produced, the more the profitability of respondents. It can be deduced that processors with many customers may produced more quantity of oil per month and this may be liken to their strong capital base, quality of oil and packaging.

Thus, the null hypothesis that state that there is no significant relationship between the profit level and some selected socio economic variables was rejected and the alternative was accepted.

### 3.3 Problems Faced by Respondents during Palm Oil Production

In Table 3, the result showed that 38.33% of the respondents had water problem, 37.50% were faced with transportation problem, 13.33% had financial problem. Moreover, 12.50% had other problems, 5% had problem of scarcity of palm fruits, 2.50% were faced with inadequate machinery for processing and 0.83% were faced with storage facility problem. This implies that the respondents had difficulties in accessing the nearby markets due to bad roads which resulted into high transportation cost. Also, they do not have good source of water and financially they could not go beyond small scale production. This is supported by the findings of [13], who revealed the problems of fund, bad roads, inadequate processing facilities and storage facilities among oil palm processors in her study.

### 3.4 Problems Faced during Marketing of Palm Oil

In Table 4, the result showed that 87.50% had problem of market instability, 8.33% had

**Table 2. Distribution of respondents by determinants of profitability**

| Average revenue | Coefficient | Standard error | p-value |
|---|---|---|---|
| Age | -.1640973 | .795028 | 0.837 |
| Marital status | -.5248699 | .8411556 | 0.534 |
| Highest qualification | -1.320618 | .4741636 | 0.006*** |
| Year of Experience | -.0171805 | 0.613346 | 0.780 |
| Association | -1.021713 | .4597373 | 0.028*** |
| Ownership of oil palm plantation | -2.125491 | 1.004495 | 0.037*** |
| Source of palm fruits | -.2923016 | .6849468 | 0.670 |
| Source of land | -.4016256 | .4150763 | 0.335 |
| Residue of palm fruit | 1.239562 | 2.211353 | 0.576 |
| Quantity of palm oil | .9939519 | .015408 | 0.000*** |

*Source: Own Computation, 2016*
*F = 328.33; Adjusted R- Squared = 0.9760; p < 0.001*
*** means significant at 1% level*

**Table 3. Distribution of respondents by problem faced during palm oil production**

| Problem faced during production | Frequency | Percentage |
|---|---|---|
| Scarcity of palm fruits | 6 | 5.00 |
| Transportation | 33 | 27.50 |
| Storage facilities | 1 | 0.83 |
| Water | 46 | 38.33 |
| Inadequate machinery | 3 | 2.50 |
| Finance | 16 | 13.33 |
| Others | 15 | 12.50 |
| Total | 120 | 100.00 |

*Source: Field Survey, 2016*

**Table 4. Distribution of respondents by problems faced during marketing**

| Problem faced during marketing | Frequency | Percentage |
|---|---|---|
| Marketing instability | 114 | 87.50 |
| Transportation | 10 | 8.33 |
| Labour | 4 | 3.33 |
| Others | 1 | 0.83 |
| Total | 120 | 100.00 |

*Source: Field Survey, 2016*

transportation problem, 3.33% had labour problem while 0.83% had other problems such as occasional low patronage. This implies that the market price were dictated by the buyers, thus the respondents were always afraid of running at lost.

## 4. CONCLUSION AND RECOMMENDA-TION

In conclusion, the educational level, membership of association such as cooperative society and others contributed to the respondents profitability. Also, ownership of oil palm plantation enhances more profit and the more the quantity of palm fruits processed the more the profit. It is therefore, recommended that women should be encouraged to form associations or co-operative societies to pool resources together in order to generate more fund for their processing activities. There is need to construct good roads to enhance networking between villages and markets. In quest to bring back the lost glory of the nation as the largest producer of palm oil before the discovery of crude oil, government should provide adequate storage and modern processing machines to prevent excess supply during the peak of production and reduction of drudgery associated with palm oil processing activities respectively.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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*Peer-review history:*
*The peer review history for this paper can be accessed here:*
*http://www.sdiarticle3.com/review-history/48038*