GENDER PERFORMANCE IN OIL PALM FRUIT PROCESSING IN SOUTH WEST, NIGERIA

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ABSTRACT

The study examined gender differential in the performance of oil palm fruit processors in South West, Nigeria. The primary data were collected with the aid of structured questionnaire. Multistage sampling technique was used to select 320 oil palm fruit processors. Data collected were analyzed using descriptive statistics, budgeting technique and Seemingly Unrelated Regression Equation (SURE). Analysis of the costs and returns revealed that revenues were ₦1,283,872.94 (male) and ₦728,814.09 (female). The gross margins for male and female processors were ₦684,393.18 and ₦384,762.04 respectively, while profits were ₦432,998.98 and ₦299,920.52 for male and female, respectively. The mean gross margin and profit indicates that oil palm processing business is a profitable business, with male processors recording more profits. The results of the SURE analysis of the factors affecting performance of the female respondents were age (-76.65), education (149.11), marital status(958.07), experience(74.70), labor cost(-0.26) and cost of transportation(0.22) while for the male were age (-147.40), education(-44.96),family size(569.59), cost of transportation(-1.39) and experience(297.52). It can be concluded that female processors perform better than their male counterpart. Policy makers should focus on both the male and female processors and extension services need to be directed towards the technique of processing so as to reduce the cost of labor affecting their ROI.

Keywords: Gender, Performance, Oil Palm, Processors, Factors, Processing

INTRODUCTION

Palm oil is an indispensable nutritional ingredient in the diet obtained from palm fruit (*Elaeisguineensis*) and constitutes major source of global edible and fat production according to Malaysian Palm Oil Council (2007). Apart from palm oil's necessity in diet, global demand for palm oil increases daily, especially for source of financial livelihood for many rural dwellers and industrial applications (Omereji, 2005). In Nigeria, palm oil industry is among the most potent means of reducing poverty employment opportunity and economic sustainability (Patrick et al., 2013).

Olagunju (2008) also reported that palm oil processing, irrespective of level serves as a major source of revenue generation and employment opportunity amongst many poor rural inhabitants in Nigeria.

Moreover, finding has shown that introduction of capital-intensive technique adopted in processing would reduce labour cost, while policies centered on education of processors would enhance performance in palm oil sector (Patrick *et al.*, 2013). The efficient use of resources available and labour greatly determine the achievement that could be recorded in processing of palm oil (Ukpabi, 2004).

The difference in gender may affect the performance and production indifferent ways in palm oil industry. Gender difference is the discrimination or differential treatment based on gender and in most developing countries the discrimination tends to favour men at the expense of women, who are often a crucial resource in agriculture and the rural economy (Rapando, 2013).

Certain factors could affect the performance of both the male and female oil palm processors in the study area on the basis of income and living standards. The findings from this study therefore, will be important in terms of policies which should focus on these factors for improved performance.

Consequently, the specific objectives of this study are to:
1. determine and compare the performance of the female and male processors.
2. determine the factors affecting the performance of oil palm processors.

METHODOLOGY

This study was carried out in South Western part of Nigeria. The study adopts a multi-stage sampling procedure. The first stage involved purposive selection of Ondo and Ekiti States out of the six states in Southwest, Nigeria based on the predominance of oil palm processing enterprises. The second stage involved purposive selection of four (4) Local Governments Areas (LGAs) based on concentration of oil palm processing enterprise from each State. The Local Governments Areas were, Okitipupa, Irele, Akure North and Ifedore of Ondo state and Ekiti state were Gbonyi, Ise, Emure and Ikere. The third stage involved purposive selection of four (4) oil palm dominated processing communities from each LGA. The fourth stage involved stratified selection of 10 respondents (5 males and 5 females) from each community in order to adequately capture both gender.

This gives a total sample size of 320 oil palm processors but only 275 was valid for the study. Majority of the male from the selected community were not involved in oil palm processing hence 93 male respondents were used for the analysis of the study; see Table 1

Table1. Selection of Respondents

S/n	States Selected	LGAs Selected	No. of Communities per LGA	No. of Respondents per Community
1.	Ondo	Okitipupa	4	10
		Irele	4	10
		Akure North	4	10
		Ifedore	4	10
2.	Ekiti	Gbonyi	4	10
		Ise	4	10
		Emure	4	10
		Ikere	4	10
	Total		**32**	**320**

Source: Field Survey, 2019

Budgetary Technique

The budgetary technique was used to determine the cost and returns from oil palm processing in the area. Costs and returns were estimated on output within a production season of 2018/2019. Variable costs include: costs of Fresh Fruit Bunches(FFB), labour, picking, slicing, threshing, sieving, boiling, digestion, offloading, water, firewood, rubber, basket, transportation, annual rent, and diesel, while the fixed cost include: costs of equipment such as digester, broiler, presser, axe, cutlass, wheelbarrow, separator, filter, basin, shovel and cracker.

The equations of the budgetary analysis are stated as:

$TR = P \times Q$

$TCP = TVC + TFC$

$GM = TR - TVC$ ……...…(1)

$NI = TR - TCP = GM - TFC$

$ROI = TR/TCP$

$ESR = TFC/TVC$

$GR = TC/TR$……..……(2)

Where;
TR = Total revenue, P= Price (Naira), Q = Quantity (litre), TCP = Total cost of processing, TVC = Total variable cost, TFC = Total fixed cost, GM= Gross margin, NI = Net income, ROI =Return on Investment, ESR = Expenses Structure Ratio, and GR = Gross Ratio

3.4.3 Seemingly Unrelated Regression Equation (SURE)

Seemingly Unrelated Regression Equation (SURE) was used to determine and compare the performance of the male and female respondents as specified below:

$Y_i^* = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, \varepsilon_i$……...……..(3)

Where

*Y = the dependent variables and they are Y_a and Y_b for profit and ROI respectively.

X_1 = Age

X_2 = Education

X_3 = Household size

X_4 = Marital status

X_5 = Experience

X_6 = Labour cost

X_7 =Transportation cost

ε_i= error term

$\beta_{1\text{-}7}$ are estimated parameters.

RESULT AND DISCUSSIONS

Costs and Returns Analysis

Table 2 revealed the budgetary analysis of the oil palm processors, which comprises total revenue and total cost of processing in the study area. The total cost of processing comprises total fixed cost and total variable cost. The total fixed cost (TFC) accrued by female processors was ₦84,841.5 while male processors accrued ₦251,394.2. The TFC values for both genders formed about 19.7% and 29.5% of the total cost of processing (TCP) respectively. The mean TFC was ₦141,166.6, which accounted for 24.7% of TCP. It was therefore observed that male processors' TFC was not only higher than the females' there was also a significant difference in the percentage of TCP they accounted for. This indicates that male oil palm processors invested more capital outlay than their female counterparts in the study area. The mean total variable cost (TVC) incurred by all the processors was ₦430,433.0. Male processors incurred ₦599,479.8 while female processors incurred ₦344,052.1. The difference in these values for male and female processors reflected the difference in the magnitude of their processing activities, as the values accounted for 70.4% and 80.2% of TCP of male and female respectively.

The total cost of processing for male processors was ₦850,874.0, while that of female processors was ₦428,893.6, which indicated that male oil palm processors in the study area operate on a larger scale than their female counterparts, with a mean TCP of ₦571,599.7.Their respective total revenues were ₦1,283,872.9 (male) and ₦728,814.1 (female).This difference is to be expected, based on the afore-mentioned scale of processing. The gross margins for male and female processors were ₦684,393.2 and ₦384,762.0 respectively, while their profits were ₦432,998.9 and ₦299,920.5 respectively. The mean gross margin and profit of 498,534.6 and 357,367.9 indicates that oil palm processing business is a profitable business in the study area, with male processors recording more profits.ROI value for female processors was higher than that of their male counterparts, at 1.70 and 1.51 respectively, meaning that female processors had better performance than male processors.

Percentage profit confirmed that oil palm processing is a highly profitable venture in the study area, processors should be able to pay back loans even at commercial bank interest rate of at least 30% per annum. This performance indicator is even better for female processors, as they have a higher percentage profit of almost 70% while for the male is 51%.The value of Expense Structure Ratio (ESR) of 0.33 indicated that the variable cost incurred in the business is greater than money expended on fixed cost by 67%, with females incurring more, at 75%. The value of gross ratio (0.62) also revealed that total revenue accrued from oil palm processing is greater than the total cost expended in the course of the business by 38%, with female processors accruing more, at 41%, compared to male processors' 34%. All these profitability measures confirmed and reiterated the profitability of oil palm processing in the study area. These measures also made it clear that even though male processors recorded more profits, it was female processors whose business activities had better performance.

The average incomes observed by Koledoye and Deji (2015) are lesser than the values realized in this study. According to them, the mean annual income of male and female respondents from oil palm processing activities were ₦264,500 and N231,097, respectively. The probable reason for the difference is because income is a difficult characteristic to measure, given the fact that most farmers in Nigeria do not keep proper records of their farming activities and couple with the fact that sometimes they deliberately refuse to disclose the amounts they actually realized for the fear of taxation and other security reasons. The value (1.56) of ROI gotten by Ukwuteno *et al.* (2018) is slightly higher than the one realized in this study on male gender (1.51) but less than the values 1.70 of female.

Again, Ohimain *et al*. (2018) reported a gross ratio that for every N1.00 return to the mill 68.00 kobo was spent on the production processes and this is also similar to the outcomes of this study which is higher than the values realized from male gender but less than the value of female gender. The finding of this study is higher than 1.29 ROI reported by Olagunju (2008), but far lower than Ibitoye and Onje (2013) findings that shows that for every #1 spent in oil palm processing #4.16 is generated in return. The profit margin of a processing mill is dependent on the processing toll (Simeh, 2002; Oladipo, 2008; Orewa *et al.,* 2009), the type of bunch being processed (Orewa *et al.,* 2009) and the ripeness of the FFB at the time of harvest and processing (Ohimain *et al.,* 2014). Expense Structure Ratio (0.087) reported by Ohimain *et al*. (2014) is far lesser than 0.25 and 0.42 realized in this study for female and male respectively but similar to the value (0.423) reported by Olagunju (2008).

Factors Affecting the Performance of Oil Palm Processing in the Area

The results of the Seemingly Unrelated Regression Equation (SURE) in determining factors affecting performance of oil palm processing is presented in Table 3.

Female Gender Results

The result in the Table 3 revealed chi-square statistic for female respondents as 79.41 for profit, 156.11 for ROI and are significant at 1% level. This implies that the null hypothesis of the restrictions of valid homogeneity and symmetry for the system equations were accepted. Furthermore, the female respondents result showed that coefficients of age of the processors was negatively related with the regressands and were statistically significant at 1% level apiece. This implies that older oil palm processors had their profit reduced by ₦76.65. The ROI value revealed that older oil palm processors loose ₦0.06 per Naira invested.

The coefficient of education was also positive and statistically significant at a maximum 5% level with the dependent variables for female processors. This implies that advancement in educational attainment will cause a positive increase in the value of profit by ₦149.11. Also, as the respondents' level of education increases, 17kobo will be gained on every naira expended on oil palm processing enterprise.

The coefficient of marital status of the respondents was positive with the regressands. The result further showed that the coefficient of marital status was statistically significant in affecting ROI at 1% levels. This implies that for every naira invested by the married respondents there will be return of ₦1.93.

Table 2: Results of Profitability Measures of Oil Palm Processing in the Study Area

ITEMs	**FEMALE**		**MALE**	
	Mean	Percentage	Mean	Percentage
Depreciation cost on equipment	**84,841.5**	**19.8**	**251,394.2**	**29.6**
Total Fixed Cost	**84,841.5**	**19.8**	**251,394.2**	**29.6**
Variable Inputs				
Annual rent	82,753.09	19.29	144,189.81	16.95
Picking cost	55,774.41	13.00	97,181.89	11.42
Slicing cost	4,772.84	1.11	8,316.25	0.98
Threshing cost	3,777.43	0.88	6,581.83	0.77
Sieving cost	4,261.87	0.99	7,425.93	0.87
Boiling cost	5,392.80	1.26	9,396.48	1.10
Digestion cost	4,176.11	0.97	7,276.50	0.86
Offloading cost	6,529.63	1.52	11,377.30	1.34
Water cost	9,155.76	2.13	15,953.09	1.87
Firewood cost	5,216.25	1.22	9,088.85	1.07
Kerosene cost	8,055.66	1.88	14,036.25	1.65
Rubber keg cost	4,227.69	0.99	7,366.37	0.87
Basket cost	3,597.93	0.84	6,269.08	0.74
Transportation cost	73,954.80	17.24	128,859.58	15.14
Diesel cost	4,875.29	1.14	8,494.75	1.00
FFB Cost	21,629.55	5.04	37,687.55	4.43
Total labour cost	45,900.94	10.70	79,978.27	9.40
Total Variable Cost	**344,052.1**	**80.2**	**599,479.8**	**70.4**
TCP	**428,893.5**	**100.00**	**850,873.9**	**100.00**
TR	**728,814.0**		**1,283,872.9**	
Profit	299,920.5		432,998.9	
ROI	1.70		1.51	
ESR	0.25		0.42	
GR	0.59		0.66	

Source: Computed from Field Survey Data, 2019

Table 3: Results of Seemingly Unrelated Regression Model on Factors Affecting Performance of processors in The Study Area

Variables	Female		Male	
	Profit	**ROI**	**Profit**	**ROI**
Age	-76.65***	-0.06***	-147.40**	-0.04*
	(0.000)	(0.003)	(0.013)	(0.068)
Education	149.11**	0.17**	-44.96**	-0.12
	(0.043)	(0.019)	(0.028)	(0.148)
Household	153.96	0.07	569.59**	0.09
	(0.156)	(0.527)	(0.020)	(0.386)
Marital status	958.07	1.93***	-242.31	-0.99
	(0.178)	(0.006)	(0.254)	(0.255)
Experience	74.70**	0.06*	297.52**	0.07
	(0.027)	(0.086)	(0.016)	(0.156)
Labour cost	-0.26	-1.09e-05*	-0.40	-1.23e-06
	(0.683)	(0.074)	(0.636)	(0.722)
Transport cost	0.22	-9.95e-06**	-1.39**	-4.94e-06
	(0.608)	(0.018)	(0.019)	(0.044)
Constant	125.67	26.98	1137.38	6.58
			(0.057)	(0.008)
Chi-square	79.41***	156.11***	33.37***	15.89**

Source: Computed from Field Survey, 2019. Significant at***1%, **5%, *10%

The coefficient of oil palm processing experience was statistically significant at 5% and 10% for profit and ROI respectively. The result also revealed positive association with the dependent variables. This indicated that the more experienced respondents are, the profit will increase by ₦74.70. Furthermore, increase in year of experience will contribute 6kobo to every naira expended on oil palm processing enterprise.

Labour cost showed a negative association with the dependent variables. It was observed that ROI was negatively related and statistically significant at 10% which implied that labour cost will reduce ROI by 0.000019in the oil palm processing enterprise.

The coefficient of cost of transportation's was positively associated with profit, except ROI. The variable ROI was significant at 5% level. This could imply that a naira increase in the cost of transportation will reduce ROI accrued by 0.000099.

Results of the Male processors

Table 3 further revealed the male processors result which showed that coefficients of age of the processors was negatively related with the regressands and were all statistically significant at 5% level apiece except ROI that is significant at 10%. This implies that advancement in the age of male respondents reduce profit by ₦147.40. The ROI value revealed that for every naira invested by the respondents, ₦0.04 was lost from the oil palm processing business.

Education had negative coefficients for the dependent variables. It is statistically significant for profit at10%. It was revealed that advancement in educational attainment of the male respondents could reduce their profit by ₦44.96.

Household size coefficients of the respondents had positive relationship with the dependent variable, profit and statistically significant a profit at 5%.The results showed that a unit increase in the number of family size will increase profit by ₦569.59.

The coefficient of years of experience was positively related with profit and statistically significant at 5%. The results showed that an increase in the years of experience will increase profit by₦297.52.

Transportation cost had a negative coefficient with the dependent variables but statistically significant at 5% level with profit. This implies that a naira increase in the cost of transportation will reduce the profit by ₦1.39. The results on the factors affecting performance of male processors in this study area such as education, experience and labor cost generally agreed with that of palm oil processors in the South-South region of Nigeria (Patrick *et al*., 2013).

CONCLUSION AND RECOMMENDATIONS

The factors affecting performance of the respondents revealed that the major factors affecting the performance of the female were age, education, marital status, experience, labor cost and cost of transportation while for the male, age, education, family size, cost of transportation and experience.

The male respondents had more profits than the female because they are operating on a large scale while female respondents had ROI value higher than that of their male counterparts. Hence, female respondents had better performance compared to their male counterparts. Based on findings from this study, the following recommendations are made:

i. Study revealed that the factors affecting performance of both male and female oil palm processors were education and years of experience. The findings of this study call for policies which should focus on male and female oil palm processors' education and extension services training that will better their experiences for improved performance.

ii. The cost of labour reduces the ROI for the female respondents; therefore, extension services need to be directed towards the female technique of processing for better technology method of processing to be embraced so as to reduce the cost of labour. Policy makers and/or government should focus on the processors and provide necessary assistance in terms of finance to boost their scale of production.

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