

Well-Being of Palm Kernel Oil Processors in Oyo State in Nigeria

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Abstract : One of the major reasons for failure in agricultural sector in Nigeria is because of much attention on production neglecting other aspects of the value chain particularly processing and preservation related activities. Therefore, palm kernel oil processing and effects on the well-being of the processors in Oyo state was assessed. A multi-stage sampling procedure was used to obtain data from 120 palm kernel oil PKO processors using a structured interview schedule. Descriptive and inferential statistics were used to analyse the data collected. Findings reveal that the mean age of the respondents was 45.7 years. Most (90%) of the respondents sold their products to secondary processors. Grinding the nut was the highest of respondents' involvement in PKO activities. Small and scattered palm kernel nut sellers (60.0%) and high cost of technical facilities (57.5%) were the most severe constraints to processing of palm kernel oil. Higher proportions (59.2%) of the respondents were better-off. Significant relationship existed between well-being of processors and constraints ($\chi^2=0,209$; $p<0.05$). In spite that most of the respondents are better-off, there are still challenges to be addressed. It is therefore recommended that the PKO processors should form cooperative society in order to collectively buy and share among themselves the palm kernel nuts needed for the processing PKO .

Keywords: Well-being, Palm kernel oil, Processors

1 Introduction

In the past when agriculture was still the mainstay of Nigerian economy, the eastern part of the country produced mainly palm oil. One of the derivatives of oil palm is palm kernel nut. Palm kernel nut is produced after oil extraction from palm kernel fruit and the shell is cracked. Palm kernel nuts is used in the production of palm kernel oil and palm kernel cake which is used in the preparation of animal feed (Oriaku, 2013). According to Razaee (2014), palm kernel oil is an important and cheap source of oil for the manufacturing of soap, production of bio fuel and cooking oil etc.

There are two methods of cracking Palm Kernel Oil, the hand cracked and mechanical methods. According to

Okoroigwe, Ofomata, Oparaku, Unachukwu, *et al.* (2013) hand cracking method is mostly common in the villages which is done through the use of milestone in the breaking of the shell in order to remove the nuts. This method is preferred because the free fatty acid content is usually low due to fewer breakages of the nuts although output is low. While the mechanical method is done by the use of sophisticated machine called "Crusher".

The use of sophisticated machine will facilitate the production of palm kernel oil in large quantity. The production of palm kernel oil in large quantity will serve as one of the means of enhancing the diversification of the Nigerian economy. This will assist the country in overcoming the problem of over-dependence on oil and

prevent her from falling into recession anytime there is drastic fall in the price of crude oil at the international market.

The current economic recession makes it obvious that we need to change focus from crude oil to agriculture. Palm kernel oil is a major 'product that could boost the nation's economy. According to Firestone (2013), the annual estimated size of the local market for palm kernel oil in Nigeria is at about N4.24billion, this means the market for palm kernel oil is readily available in the country and by extension in overseas. Despite how lucrative this business is, smallholders' processors constitute 80% of those that engaged in palm kernel oil production in Nigeria (Foundation for Partnership Initiatives in the Niger Delta (PIND), 2011).

There are very few processors in the country; therefore, more people should be encouraged to go into the processing of palm kernel oil (Osei-Amponsah and Stomph, 2012). Aside the issues of few people engaging in PKO processing, there numerous challenges confronting the maximisation PKO processing enterprise in making the lots of the processors to be better.

Key factors that constrain palm kernel oil processing in Nigeria including Oyo state are labour, finance, inaccessibility of loans as well as insufficient fund to acquire processing machines which are expensive (Dada, 2007) The processes employed by smallholder processors are tedious and time consuming (Izah and Ohimian, 2016). There are inadequate storage facilities for excess palm kernel oil processed. Even when they are available, communication channels, transportation systems and access road infrastructures are deficit (Gourichon, 2013). The well-being of the processors in terms of material, economic, social and health wellness may be negatively affected due to

the aforementioned constraints affecting PKO processing enterprise. Previous studies on palm kernel processors have not been adequately focused on the well-being of palm oil processors. Hence, the well-being of PKO processors in Oyo state was assessed.

The goal of this study is to assess the effects of processing palm kernel oil on processors well-being. Specifically, the study:

- a. described the socio-economic characteristics of the respondents .;
- b. described their enterprise characteristics;
- c. determined the constraints that limit processing and
- d. ascertained their level of involvement in palm kernel oil processing in the area.

The relationship between some of the independent variables and the dependable were tested through the hypotheses stated in null form as follows;

- a. There is no significant relationship between constraints and well-being of processors
- b. There is no significant relationship between level of involvement and well-being of processors

2 Materials And Methods

The study was carried out in Oyo State, Nigeria. The state consists of thirty three (33) Local Governments Areas(LGAs). The climate in the state favours the cultivation of crops such as maize, yam, cassava, millet, rice, plantain, cocoa tree, palm tree and cashew. The choice of the state is based on the fact that Oil palm is one of the major tree crops in the area and the processing of palm kernel oil is one of the major agricultural processing activities therein.

A multi-stage sampling procedure was used in selecting the respondents for the study. Purposive sampling technique was used to

select three LGAs (Akinyele, Lagelu and Ona-Ara) where palm kernel oil processing is predominantly active. In each of the selected LGAs, two villages where oil palm processing is predominantly active were purposively selected. In each of the selected six villages, 20 respondents were randomly selected giving a total of 120 respondents for the study.

A structured interview schedule was used to collect information from respondents. Personal characteristics, enterprise characteristics, level of involvement in processing, constraints encountered and well-being of the palm kernel oil processors were the variables considered. Mean score for each of the constraints was generated and the computed pooled mean of 2.32 was used to categorise the constraints into those constituted problem or otherwise to the processing of PKO. Furthermore, the composite score from each of the constraints was used for inferential analysis. In addition, the mean score of 19.5 was used as benchmark for categorizing the respondents into high and low involvement in PKO processing. Well-being of the respondents was measured with the domains of material, economic, social and health well-being. Items under each of the domains were summed up to generate composite score for each of the domains. The scores generated for each of the domains were standardised and added together to generate the total well-being score for each of the respondents. The mean score for the total well-being score was computed. Respondents having well-being with scores equal to and above the mean scores were regarded as better-off. While those with scores below the mean score were categorised as worse-off. Data collected were analyzed with the aid of descriptive tools such as frequency distribution, mean, percentages and inferential statistic (Pearson's Product Moment Correlation (PPMC))

3 Results and Discussion

3.1 Personal characteristics

The mean age of the respondents as shown in table 1 was 45.7 years. This shows that they are in their active and productive years. Therefore, the processing of PKO will be sustained in the study area, provided the processors have access to necessary incentives. This corroborates the finding of Bello, Ejembi, Allu and Anzaku (2013) that the average age of cassava processors Doma Local Government Area of Central Nigeria was 45 years. The study also reveals that more male (59.2%) were involved in Palm Kernel Oil in the study area. This may be as a result of the notion that palm oil processing is perceived as an energy demanding and hazardous occupation where processors are exposed to the risks associated with the operations of machinery.

Majority (94.2%) of the respondents had one form of education. The finding contradicts that of Akangbe, Adesiji, Fakayode and Aderibigbe (2011) which stated that 55% of palm oil processors in Afijio Local Government Area of Oyo state had no formal education. Since education greatly determines farmer's rate of adoption of modern practices and acceptance of modern techniques, it is expected that productivity and ability to efficiently manage risk in agriculture by the processors will be enhanced. The study revealed that the mean household size of the respondents was approximately 4. This relatively small household size implies that, family labour may not be sufficient for palm kernel oil processing.

3.2 Enterprise characteristics of the respondents

Result in table 2 shows that higher proportion (80%) of the respondents

employed self labour for palm kernel oil processing. This is an indication that the scale of palm kernel oil processing may be low. In a similar situation, Ajani, Onwubuya and Nwalieji (2012) reported that household labour accounted for 78% of the source of labour for oil palm processing in Enugu North agricultural zone of Enugu State, Nigeria. The average years of experience of palm kernel oil processing of the respondents was approximately 10 years. This implies that the respondents have gained moderate experience that can enhance decision making in the adoption of technologies that can improve the processing of PKO. The mean monthly income of the respondents was ₦51, 483. This is an implication that the respondents are fairly financially endowed to meet basic needs. However, the financial standing of the respondents may not be sufficient for them to acquire the expensive machines needed for palm kernel oil processing. Table 2 also shows that most (90%) of the respondents sold their product to secondary processors. This finding suggests that the respondents have ready-made markets to sell their products for further processing of the palm kernel oil into finished product status.

3.3 Constraints encountered by processors in palm kernel oil processing

Result in table 3 shows that the most prominent encountered by the respondents in the processing of PKO was small and scattered palm kernel nut sellers (2.58). Other prominent constraints are high cost of technical facilities (2.53), lack of credit facilities (2.48), inadequate storage capacity and warehousing facilities (2.46), lack of information about production and marketing (2.45), unstable power supply (2.43), unfriendly attitude of other processor (2.38) and lack of processors organization (2.36). This is an indication that the respondents are

facing serious challenges in the processing of PKO. However, the respondents did not consider poor market demand (1.19) as a problem. Invariably, poor market demand has no negative effect on their processing of PKO. In a similar vein, Nwankwo (2016) highlighted finance and cost of harvesting and buying of palm fruits as constraints affecting women palm oil processors in South-East Nigeria. In addition, Udoh and Essien (2015) stated lack of mechanized processing, poor produce pricing by middlemen, lack of storage facilities, lack of capital for large-scale production and expansion, lack of credit facilities by micro-finance banks, and long period of maturity as constraints confronting palm oil processors in Akwa Ibom state, Nigeria.

3.4 Level of Involvement in Palm Kernel Oil Processing

Table 4 shows that the respondents' involvement in most the PKO processing activities was high except in the sorting of the nuts (2.45), shelling of the nuts (0.98) with mean scores that are lower than the pooled mean of 2.49 for all the activities. The activities in which the respondents had high level of involvement include heating of the nuts (2.75), grinding of the nuts (2.80), grading of the oil (2.75), boiling of the oil (2.70), storage of the oil (2.71) and marketing of the oil (2.81). This depicts that the respondents were actively involved in most of the processing activities. Furthermore, their level of involvement in most of the activities could be because majority of them employed self labour for the processing of PKO.

Table 5 reveals the results of the level of processors' involvement in palm kernel oil processing where 78.3% and 21.7% were in the categories of high and low involvements respectively. Hence, the level of most of the respondents' involvement in PKO processing activities in the study area was

very high. This implies that most of the respondents have positive expectations from

the processing of PKO

Table 1. Percentage distribution of respondents according to personal characteristics

Variable	Percentage(n= 120)	Mean (M)
Age		
16-25	0.8	
26-35	15.0	
36-45	40.0	45.7
46-55	22.5	
56-60	21.7	
Sex		
Male	59.2	
Female	40.8	
Educational attainment		
No formal education	5.8	
Primary education	14.2	
Secondary education	48.3	
HSC/OND certificate	15.0	
BSC/HND degree	15.0	
Master degree	1.7	
Household size		
1-3	31.7	
4-6	55.8	4
7-9	9.2	
10-12	3.3	
Mean = 4		
S.D = 1.9		

Source: Field survey, 2017

Table 2.Percentage distribution of respondents according to enterprise characteristics (n=120)

Variable	Percentage	Mean (M)
Source of labour		
Self	80.0	
Family	18.3	
Hired	24.2	
Group work	61.7	
Years of Experience		
1-6	30.0	
7-12	40.0	
13-18	19.2	10.4
19-25	10.8	
Monthly Income(₦)		
8,000-49,184	55.0	
49,185-82,369	34.2	
82,370-123,554	3.3	51,483
123,555-164,739	4.2	
164,740-200,000	3.3	
Mode of sale		
a) Local market	30.0	
b) Secondary processors	90.0	

Source: Field survey, 2017

3.5 Wellbeing of Respondents

Table 6 shows that 59.2% of the respondents were better-off. This is an indication that more than 40% of the respondents fall in the worse off category. Therefore, the respondents that are better off are less than two-third of the entire respondents. This is a far cry of the desired level of well-being of the respondents. This means that a lot of things are needed to be done in order to achieve satisfactory level of well-being of the respondents.

3.6 Relationship between Constraints and Well-being

Table 7 shows that there was a significant relationship between constraints that limit palm kernel oil processing ($r= 0.209$; $p<0.05$) and well-being. This indicates that

they are severely affected by the constraints which require that both government and Non-government organizations collaborate to mitigate the effect of identified constraints on palm kernel oil processing.

Furthermore, table 7 reveals that there was no significant relationship between the level of involvement of respondents ($r= 0.089$; $p>0.05$) and their well-being. This implies that level of involvement in palm oil processing does not have significant influence on well-being of palm oil processors. It can further be deduced that the difference in respondents' level of well-being was due to their involvement in other livelihood activities aside the processing of PKO.

Table 3. Distribution of respondents according to constraints faced in processing of PKO

Constraints	Mean	S.D
Small and scattered palm kernel nut sellers	2.58	0.528
High cost of technical facilities	2.53	0.579
Lack of credit facilities	2.48	0.579
Inadequate storage capacity and warehousing facilities	2.46	0.607
Lack of information about production and Marketing	2.45	0.578
Unstable power supply	2.43	0.589
Unfriendly attitude of other processor	2.38	0.597
Lack of processors organization	2.36	0.658
Poor market demand	1.19	0.473
Pooled Mean = 2.32		

Source: Field survey, 2017

Table 4. Distribution of respondents according to involvement in each of PKO processing activities

S/N	Activities	Mean
1.	Shelling of the nuts	0.98
2.	Sorting of the nuts	2.45
3.	Heating of the nuts	2.75
4.	Grinding of the nuts	2.80
5.	Grading of the oil	2.75
6.	Boiling of the oil	2.70
7.	Storage of the oil	2.71
8.	Marketing of the oil	2.81

Source: Field survey, 2017

Table 5. Distribution of respondents according to level of involvement in PKO activities

Level of involvement	Percentage
High (20-23)	78.3
Low (0-19)	21.7

Table 6. Distribution of respondents according to level of well-being

Level of involvement	Percentage
Better off	59.2
Worse off	40.8

Table 7: Correlation between the constraints, level of involvement and wellbeing

Variable	r-value
Constraints	0.209*
Involvement	0.890

*P<0.05

4 Conclusions and Ecommendations

The level of well-being of the PKO processors in the study area is far from the desired level. Myriads of issues such as small and scattered palm kernel nut sellers, high cost of technical facilities and lack of credit facilities adversely affected the respondents' ability to process PKO optimally for the enhancement of their well-being. Furthermore, the respondents were actively involved in PKO processing activities due to predominance of self labour for the PKO processing in the study area.

In order to achieve the desired level of well-being of the PKO processors in the study area, it is therefore recommended that the PKO processors should form cooperative society in order to collectively buy and share among themselves the palm kernel nuts needed for the processing of PKO. In addition, the processors should explore co-operative society to raise fund for their PKO processing enterprise. Also, banks should make access to loan easier for the processors. Furthermore, the National Centre for Agricultural Mechanisation (NACM) should design low cost PKO processing machines such as palm kernel nut shelling machine in order to making PKO processing easier for the respondents.

Lastly, government should establish programme geared towards assisting the

processors to up scale their PKO processing, so that they will be equipped to overcome adoption of self labour for the processing, because self labour will constitute a barrier to large scale processing of PKO.

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