Assessment of Indigenous Processing of Oil Palm Fruits into Oil and Cake Among Women for Poverty Alleviation and Empowerment in Afikpo North Local Government Area of Ebonyi State, Nigeria

[1]Oga I. O. & [2]Oga M. O.

[1]Department of Agricultural Technology, Akanu Ibiam
Federal Polytechnic Unwana, Afikpo Ebonyi State.
[2]Department of Home Science, Michael Okpara University of Agriculture, Umudike Abia State

Abstract

The purpose of the study was to assess the indigenous processing of oil palm fruits into oil and cakes among women and by implication its effect on poverty alleviation and women and by implication its effect on poverty alleviation and women empowerment in Afikpo North Local Government Area (LGA of Ebonyi State, Nigeria. It described socio economic characteristics of the respondents, effects of socio-economic characteristics on and identified constraints on processing and production and determine profitability. Purposive and simple random sampling methods were adopted in this research. Primary data were collected by means of questionnaire and 4-point likert type scale. Nonparametric and parametric statistical tools including percentages, frequency distributions, means ranking, budgetary technique and probit analysis were used for data analyses. Majority (90%) of the palm oil and palm kernel cake producers were females, 84% are not members of cooperative society, cost of oil palm fruits accounted for 44% of total production cost, gross margin was N220,000, return on investment 1.20, operating ratio 0.38. Results of the output of the two-sample test showed significant difference between income realized from the sale of palm oil and palm kernel cake produced by the respondents. The coefficients of age, education, experience in processing and membership of farmers' society were statistically significant at 0.05 probability level. Poverty alleviation and empowerment among rural women and would be ensured by encouraging awareness campaigns, extension education, provision of interest free credit facilities and formation of cooperative societies.

Keywords: *Oil Palm Fruits, Oil and Cake, Women, Poverty Alleviation, Empowerment*

Corresponding Author: Oga I. O.

Background to the Study

Oil palm (*Eleisisguinensis*) is a major crop cultivated in Nigeria. Oil palm plays a major role in the economy of Nigeria, with local production done on about 3 million hectares of farmland by predominantly smallholder farmers using crude implements (CBN, 2017). It is cultivated for its oil, kernel and palm kernel cake for both humans' consumption and livestock feed. Oil palm production, processing, packaging, among others, have immeasurably improved and there are many varieties with improved attributes (Nwalieji, Madukwe, Agwu and Umerah, 2014). Women play substantial role in oil palm processing value chain activities in Nigeria. All over the world, rural women have traditionally played and continue to play an important role in agricultural production and post-harvest activities (Ugbajah and Ugumba, 2013). In Nigeria as well, the processing of oil palm just like other agricultural labour activities is mostly done by women either for home consumption or for commercial purposes (Ibrahim, 2005). Nwaru (2013) noted that the structural role of women in Nigeria agricultural value chain show that they are more actively involved in processing and marketing of agricultural products. Accordingly, Ademilua et al (2017) observed that processing and value addition activities are complex practices involving different stages in successive order. Fatunbi, Adekunle, Anthony, Odularu and bamijo, (2015) described agriculture value chain as the range of activities and set of actors that bring agricultural product from production in the field to final consumer's table, where in at each stage, value is added to the product. In oil palm fruits it consists of harvesting, movement from the farm, parboiling pounding, hydraulic pressing, removing of palm nuts or kernel, moving the oil from rural processing centre to storage or marketing.

Fatunbi et al., (2015). Accomplishment of these processes requires high level of efficiency in the handlings to achieve high quality commodity (Ajah, 2013). A survey on women contributions in agriculture by National Bureau of statistic (NBS, 2017) indicated that female participating in processing and value addition activities was, on the increase as compared to their males counter-part. Women also contribute in off-farm activities such as sales of processed packaged foods products (Ajah, 2013). The processing of oil palm fruits is both a source of income and employment to a large proportion of rural women. About 60% of world yield of oil palm fruits is processed into oil which has a multitude of domestic and industrial applications. The enterprise like many agro-processing enterprise are at micro/subsistence level of development due to inadequate of capital, seasonality of the product as well as other limitations such as drudgery, hazardous and unhygienic conditions, very little access to capital, and use of traditional processing techniques (Adisa and Okonade, 2011).

In spite of their contributions, Shuaibu, Akinola, Yusuf and Udo (2015) identified some of the women's constraints to access timely markets and improved labor-saving devices, insufficient support services (credit, extension and inputs supply), inadequate trainings and linkages to other value chain actors, among others. Provisions of interventions focusing on these constraints are particularly effective strategies to address women needs (Adam, 2018). Ogunlela and Mukhtar (2009), opined that increasing women access to resources could improve their income and eventually contribute to finances of social services, food and

nutrition ofthe household. Iliyasu, et al., (2016) observed that if small-scale processors are assisted to rise beyond subsistence level, there might be increase in their incomes through more efficient use of resources.

With the foregoing, this research tended to address the following research questions:
1. What are the socio-economic characteristics of women involved in processing oil palm fruits.
2. What are the constraints faced by women in processing oil palm fruits.
3. Is there profit in processing of oil palm fruits.

Objectives of the Study
The main objective of the study was to assess indigenous processing of oil palm fruits into oil and cake among women for poverty alleviation and empowerment in Afikpo North Local government Area of Ebony State.

The specific objectives include to:
i. Identify the socio-economic characteristics of processors of oil palm fruits.
ii. Determine the profitability of the processors.
iii. Identify constraints faced by processors.

Methodology
Study Area
This research was carried out in Afikpo North Local Government Area (LGA) of Ebonyi State of Nigeria in the year, (2018). Afikpo North Local Government Area covers an area of 240 km and lies between latitude 45° East and longitude 60° North (EBADEP, 2013). It is located in the rain forest vegetation zone of Nigeria. The LGA is an agrarian locality with a good number of the populace engaged in one form of agricultural production or the other mainly at subsistence level. The crops cultivated include both food and cash crops. The food crops cultivated in the LGA are maize, rice, yam, cassava, vegetables, among others. The cash crops include among others, oil palm, citrus and rubber. Apart from cultivation of crops, animals are reared and fishing practiced and poultry is also kept. The pattern of agricultural production is mainly affected or defined by the influence of the annual weather conditions of the locality based on two distinct seasons; the dry and wet seasons. The dry season starts about the month of November and terminates around the month of March, while the wet season starts in the month of April and ends in the month of October with the average annual rainfall of about 134mm (Ebonyi State Agricultural Development Programme (EBADEP, 2013).

Sampling Procedure
Purposive and random sampling procedures were adopted in this research. Afikpo North Local Government Area (LGA) is made up twelve (12) Autonomous Communities (ACs). Ten (10) Autonomous communities (ACs) involved mainly in oil palm production and processing and which represent about 80% of the Autonomous Community were purposively selected. Simple random sampling was used to select five (5) respondents from

each of the ten (10) purposively selected ACs to give a total of fifty (50) respondents who were sampled for the research.

Result and Discussions
Socio Economic Characteristics
The outcome of socio-economic characteristics of the rural women, Table 1, showed that majority of the respondents are females, implying that women play active roles in processing activities than males in the LGA. Further findings on socio-economic factors showed that most of the females (80%) were within the active productive age range of 31-51 and above a mean age of 41.2, majority (82%) were literate, majority (90%) had household size of between 5-15 persons in their house, 94% had above 14 years of processing experience, 72% used their personal savings to do the business and about 15% belong to farmers' society. Further findings showed that the annual revenue was N1,360, 000,00 and the total fixed cost was N21,140.00. The implication of this outcome is that investment in processing of oil palm fruits will guarantee a promising future and ready markets for the products.

Effects of socio-economic factors on the respondent's Net income
The estimated probit analysis was used to predict the effects of socio-economic characteristics of the respondent such as age (AGE) marital status (MS), educational level (EDU), processing experience (EXP), and membership of farmer's Society (MF). The result of the probit analysis, Table 4, offered the best result with regard to signs and number of significant parameter estimates. Probit analyses outcome showed that age, educational level, processing experience and membership of the farmers' Society were statistically significant. Age of the respondents was significant at 5% probability level. This means that age of respondents influences processing capacity. In the case of education years of respondent's formal education have positive coefficient, statistically significant of 0.05% probability level. This result is in agreement with the priori expectation that higher educational level will facilitate the adoption of appropriate processing experience has more efficiently. Processing experience has a positive coefficient, statistically at 5% probability level. This implies that the processors with higher level of processing experiences are more likely to have acquired entrepreneurial experience, skills and the ability to diversify processing enterprise and generate more income.

In the case of membership of a farmers' society, this has a positive coefficient, statistically significant at 5% probability level. This implied that membership of a farmers' society will increase a processor's opportunity to access modern inputs and obtain credit.

Constraints in Production and Processing of Palm oil and palm Kernel Cake
The respondents in the LGA, no doubt, were confronted with some problems which hindered their ability to increase productivity. These problems include labour intensive, high processing cost and high transportation cost. A vivid look at the processing problems shown in Table 4, labour intensive with the highest mean score of 3.40 was implicated as the outstanding serious constrain to processing of palm oil and palm kernel production. This position is in agreement with Nnanna, Nwankwo and Anyanwu (2013) who in their studies

confirmed labour intensive as a constraint to increased processing of most agricultural products. This constraint was closely followed by high cost of palm fruits (3.20), lack of capital (3.00), high processing cost (1.40) and high transportation cost (1.28). These results are in agreement with that of Nwachukwu (2012), that these constraints highlighted above are the key causes of low palm oil poor processing and palm kernel cake production among rural women in the study area.

Table 1: Socio-Economic Characteristics of Respondents

Variable	Frequency	Percentage	Mean ( )
Gender			
Male	5	5	
Female	45	45	
Age			
21 – 30	5	5	
31 – 40	10	10	
41 – 50	28	28	
Above 50	7	7	
Martial Status			
Married	35	35	
Single	10	10	
Widowed	5	5	
Educational Level			
No formal education	9	9	
Primary	23	23	
Secondary	18	18	
Tertiary	0	0	
Household size			
1 – 5	5	5	
6 – 10	25	25	
11 – 15	13	13	
16 – 20	7	7	
Sources of labour			
Hired labour	5	5	
Family labour	28	28	
Hired and family labour	7	7	
Processing experience			
1 – 5	3	3	
6 – 10	30	30	
11 – 15	10	10	
16 – 20	7	7	
Source of finance			
Personal savings	36	36	
Loan from family/friends	14	14	
Bank	0	0	
Membership of Farmers' Co-operative			
Membership	8	8	
Non membership	42	42	
Amount invested in business			
5000	6	6	
5001 – 15,000	5	5	
15001 – 25,000	12	12	
25001 – 35000	13	13	
35001 – 50,000	10	10	
Above 50,000	4	4	

Source: Field Survey, 2018

Table 2: Budgetary Estimate for oil palm fruits processing

Variable	Frequency	Percentage
Production revenue		
Palm oil	820,000	60.28
Palm kernel cake	540,250	39.72
Total production Revenue	**1,360, 250**	
Production cost (PC)		
Oil palm fruit	100,000.00	43.85
Labour	75,000	3.29
Water	10,000	0.44
Salt	5,250	0.23
Fire wood	50,000	2.190
Total production cost (TPC)	1,140,000	50
Gross margin	220,250	
Mean Gross margin	110,125	
Return on investment $\underline{TR}$ $\;\;TC$		1.19
Operating ratio $\underline{TC}$ $\;\;TR$		0.83

Source: Field Survey, 2018

Table 3: Output of the Two-Sample T-test

Variable	Mean	DBM	TS	P	DF
Palm oil	8,200				
Palm Kernel cake	5,402.5	2,795	1.46	0.000	1

NB: PR= production revenue; DF = degrees of freedom; P = probability = Significant at 5%
DBM: = Difference between means; TS = T – statistics
Source: Field Survey, 2018

Table 4: Distribution of respondents by constraints in production and processing of palm oil and palm kernel cake

	Mean Score	Interpretation	Rank
Labour intensive	0.85	High	1st
High cost of input (palm fruits)	0.80	High	2nd
Lack of credit	0.75	High	3rd
High processing cost	0.35	Low	4th
High cost of transportation	0.30	Low	5th

Source: Field Survey, 2018

Table 5: Output of Probit Model Estimate

Variable	Coefficient	Standard Error	Coefficient Standard Error	= T cal
Age	0.0159415	0.004651	1.7135	0.05
MS	-0.0127725	0.01051	- 1.1075	NS
Edu	0.0071145	0.02395	1.4855	0.05
Exp	0.00001897	0.00001105	0.858	0.05
MF	0.080605	0.04383	0.9195	0.05

Source: Field Survey, 2018
NS = Significant at 0.05 probability level

Conclusion

The research revealed that increasing of palm oil processing and palm kernel cake production in the study area was affected by the constraints such as labour intensive, high cost of oil palm fruits, lack of transportation, etc. Reducing these constraints for the women processors will improve the processing of palm oil and palm kernel cake products and consequently increase their income and reduce poverty among the rural women.

Recommendations

Based on the ensuring results of the research, the following recommendations have been made:

1. The farmers should be organized into functional farmers' cooperatives and establishment of government marketing agents to buy the products from the processors.
2. The women should be encouraged by creating awareness through campaigns.
3. Extension agents should educate the farmers on new processing technologies and skills.
4. The farmers should be assisted to access interest free credit facilities to boost their processing and production activities.

References

Adam, A. G. & Bashir, M. B. (2019). *Participation of women in rice processing value chain in Agricultural Transformation Agenda support prorgamme-1 in Kano State,* Nigeria Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria.

Adam, A. G. (2018). Role of men and women in agro-in-put business in North West, Nigeria: *Journal of Agricultural extension, 22(1)* 15-21 Available http://journalaesoningeria.org http://www.ajoi.info/index.php/jae.

Ademilua, O. S. Adeeko, A., Gbotoso, O. A., Akomolafe, A. M. & Ishola, O. O. (2017). Emerging roles of women in the National food security campaign of the federal government of Nigeria: A review continental, *Journal of Sustainable Development 8 (2),* 1-7.

Ajah, J. (2013*). Factors hindering the participation of women farmers in women in Agriculture programme in Southeastern Nigeria,* Proceedings of the 17th Annual national Conference of the Agricultural Extension Society of Nigeria (AESON) 5-9 may, 2013. 33-38.

Central Bank of Nigeria (CBN, 2017*). Anchor borrowers Programme-providing financial succor to Agriculture in Nigeria.*

Ekunwe P. A., Orewa, S. I. & Ogbeide, F. O. (2014). *Socio-economic factors influence enhancing broiler marketing in Benin City Metropolis, Edo State, Nigeria,* Proceeding of the 15th National Association of Agricultural economists Annual National Conference, October, 2014.

Ekunwe, P. A., Emokaro, C. O. & Aigba, G. A. (2013) Socio-economic determinant of output of groundnut production in Estako local government area of Edo State Nigeria, *Albanian Journal of Agricultural Sciences 12 (1):* 111-116.

Fatunbi, A. O., Adekunle, A. A., Anthony, Y., Odularu, G. O. & Bamijo, A. A. (2015). *A resource manual for training in integrated Agricultural research for Development (IARAD),* in Innovation Platforms: forum for agricultural Research in Africa (FARA), Accra, Ghana.

Iliyasu, A., Wulet, I. & Yusuf, K. (2016). Profitability of groundnut processing in Maduguri metropolitan council of Borno state Nigeria. *Nigerian Journal of Basic and Applied Science, 16 (2),* 253-256

National Bureau of Statistics (NBS, 2016*). Gender. dimension to livelihoods in Nigeria: General household survey (GHS-panel),* Available at www.nigerianstat.gov.ng.

Nwaru, J. C. (2013). Gender and relative technical efficiency in smallholder arable crop production in Abia State of Nigeria, *International Journal of Agriculture and Rural Development 10 (2),* 25-34.

Ogunlela, Y. I. & Mukhtar A. A. (2009). Gender issues in agriculture and rural development in Nigeria: The role of women, *Humanity and Social Sciences Journal 4 (1)* 19-30, 2009 ISSN 1818-4960.

Onwurafor, E. U. & Enwelu, I. A. (2013). Rural Women entrepreneurship in agro-food processing in Enugu State, Nigeria, *International Journal of Research in Applied, Natural and Social Sciences (IJRANSS). 1(2),* 13-30.

Shaibu, H., Akinola, M. O., Yusuf, H. O. & Duo, I. D. (2015). *Income generating activities among rural women in Ikot Ekpene Local Government Area, Akwa Ibom State,* Nigeria. Proceedings of the 20th Annual national Conference of the Agricultural Society of Nigeria (AESON). 15-17 May, 2015 Pp102-112.

Ugbaja, M. O. & Chidebelu, S. (2012). Comparative analysis of access of financial services by rural farmers in Anambra state Nigeria, *Int. J. Appl. Res. Technol. 1(7)*

Ugbajah, M. O. & Isbor, A. C. (2014). *Traditional processing of Groundnut seeds into oil and cake among women for poverty alleviation and empowerment in Adamawa state Nigeria,* Proceedings of the 15th National Association of Agricultural Economists Annual National Conference, October, 2014.

Ugbajah, M. O. & Ugwumba, C. O. (2013). Analysis of micro credits as a veritable tool for poverty reduction among rural farmers in Anambra state, Nigeria, *Discourse Journal of Agriculture and Food Sciences.* www.rejounrals.org/JAFFISSN: 2346-7002 October *1 (10),* 152-159.

Ugwumba, C. O. (2011). *Technical efficiency and profitability of catfish production in Anambra State,* Nigeria Ph.D Dissertation. Department of Agricultural Economics and Extension, Delta State University, Abraka, Nigeria.