ANALYSIS OF LOCAL GROUNDNUT PROCESSING ACTIVITY BY WOMEN IN KANO STATE, NIGERIA

SHUAIBU, H.
Department of Agricultural Extension and Rural Development, Faculty of Agriculture, Ahmadu Bello University/Institute for Agricultural Research, Zaria, Nigeria.
shuaibuhajara2839@gmail.com
+234(0)7031187744

ABSTRACT

The study assessed groundnut processing activity by women in Kano State, Nigeria. Its objectives were to determine the profitability of the entrepreneurial activity, assess the contribution of the profit to women's income and identify the constraints the women face in groundnut processing activity. The three agricultural zones of the State were used for the study. Each zone had six registered women groundnut processors groups. Four groups out of the six were randomly selected from each zone and used. Each group had 25 members per group and all the 25 members of each group were used for the survey to give a total sample size of 298 respondents (two questionnaires were not returned). Data were collected using interview schedule with the aid of questionnaire. The tools of the analysis employed for data interpretation were descriptive statistics, gross margin analysis and return on investment. The findings of the study revealed that monthly gross income of about ₦24,006.7 was obtained from groundnut processing with average return on investment of 26% and contributed about 94% to their total income. Major constraints perceived by the women was that the profit margin was low and cost of raw material was too high. It was concluded that groundnut processing by women in the study area was profitable though there is room for improvement when our finding is compared to other studies in other parts of the country. The study recommends the women to form cooperatives and buy the raw groundnut in bulk to take advantage of lower cost.

Keywords: Groundnut, Income, Processing, Women

INTRODUCTION

Entrepreneural activities are important as income earning and self-reliant activity especially for women who are marginalized though they play key roles in reducing household poverty. One major entrepreneurial area that women are involved in is agricultural processing. Agro-processing is a set of techno-economic activities carried out on an agricultural commodity for the purpose of making it, usable as food, feed, fibre, fuel or industrial raw material (Tamil Nadu Portal, 2015). It is generally a value addition that is being carried out in order to produce same or new product in a more acceptable form and quality. Processing of agricultural produce have become increasingly important to the economies of most developing countries, as they have been to industrialized nations at various stages of their development. It has been

noted that Agro-processing activities are small-scale and require low investment capital, hence can easily be undertaken by women (Kadurumba *et al.*, 2009; Food and Agriculture Organisation, (FAO), 2011). Groundnut, soya beans, banana, palm kernel, potatoes and cassava were some of the dominant agricultural produce that are processed into local foods consumed by the rural communities in Nigeria (Napodo and Ditto, 2013).

Nigeria is a major producer of groundnuts accounting for 25 percent of world exports (International Food Policy Research Institute, IFPRI, 2012). In Nigeria, especially the northern part of the country, while men are dominant in the area of groundnut production, processing is almost 100% undertaken by women and children (Muhammad-Lawal *et al.*, Aliyu, 2015).

Groundnut (*Arachis hypogea*) is known to the Hausas as '*Gyadda*', to the Ibos as '*Opapa*', the Yorubas as '*Epa*,' the Americans as peanuts, and the French as arachides. It is eaten as whole nut, raw, boiled or roasted and also crushed to get the oil and the cake. The oil is known as groundnut oil (GNO) and the residue known as groundnut cake (GNC). Groundnut is rated the third major oil seed of the world after soya bean and cotton (United States Department of Agriculture, USDA, 2009). The residue after oil extraction is a source of protein for animal feed. Thus, it can contribute considerably as income source and as one way of job creation for self-employment.

Though groundnut oil extraction can be done through modern or traditional methods, the traditional method is the most common method used by many West and equatorial Africa (Duke, 2004). Modern method of oil extraction involves the use of machines and electric equipment that facilitates effective production of groundnut oil and groundnut cake (residue) within a short period of time. In traditional oil extraction method, the cake is fried into a local delicacy known as groundnut cake (GNC) or '*kulikuli*' in Hausa. This is ground and consumed in composite with several local dishes. Elsewhere, groundnut is processed into peanut butter, peanut flour, peanut flakes and many other products.

In Kano State, women are sole actors in traditional processing of groundnut into groundnut cake and groundnut oil. However, there are limited or no studies in the State on its profitability, its contribution to their income and the constraints they face in the course of the activity in spite of the State being a major groundnut producer in the country. This study therefore attempted to bridge the research gap by achieving the following objectives:

1 Determine the profitability of the entrepreneurial activity.
2 Assess the contribution of the profit to women's income.
3 Identify the constraints the women face in groundnut processing activity

METHODOLOGY

Kano State is located in North-Western Nigeria. The State is situated in a semi-arid region located between latitudes 10°30′ and 13°02′ north of the equator and longitude 7°40′ and 10°39′ east of the Greenwich meridian. It has 44 local government areas which are divided into three agricultural zones. Kano State has a 2015 projected population (based on the 2006 National

Population Census) of 10,067,208 people with an almost equal distribution of males (51%) and females (49%) (National Population Commission, 2009). Agriculture is the mainstay of the economy involving at least 75% of the rural population. Before the oil boom of 1970s, Kano State was the main producer of groundnut (producing at least 50% of the country total output).

A multi-stage sampling technique was employed. In the first stage, the three agricultural zones of the state were all selected for the study then four registered groups out of the six registered women groundnut processors in each zone were randomly selected and finally all 25 members of each group were used for the survey to give a total sample size of 298 respondents (two questionnaires were not returned).

Data were collected using interview schedule with the aid of questionnaire. The instrument was subjected to content and face validity. Furthermore, a pre-test with 10 selected rural women in the study area was also conducted. Thus, necessary additions, deletions, modifications and adjustments were made in the questionnaire. Data collected for the study were analysed with descriptive statistics, gross margin and return to investment and likert scale was used to capture the perception of the women on constraint to groundnut processing as described below:

Gross margin analysis

Gross margin analysis was used to determine the profitability of groundnut processing. The technique was used under the assumption that the fixed cost component is negligible as in the case with small-scale businesses (Olukosi and Erhabor, 1988). For this study, it was realized that the respondents use between 2 to 3 days for every processing cycle. Therefore, an average of about 10 cycles was obtained in a month. This means that profit from every processing period is multiplied by 10 to get the monthly gross margin. The model was used to achieve objective (ii) - to determine the profitability of groundnut processing in the study area and is expressed as:

GM = TR – TVC……..(1)

Where:

GM = gross margin (₦/month)

TR = total revenue

TR = (Qc *x* Pc + Qo *x* Pou)

Qc = quantity of groundnut cake produced

Pc = price of groundnut cake

Qo = quantity of oil produced

Pou = Price of oil per unit

TVC = Total variable cost

Return to investment (ROI)

The return on investment (ROI) was also used to assess the profitability of the enterprise. It estimates how much money the enterprise earns in return for every one naira invested (United Nations Development Programme, UNDP, 2001). The return on investment was computed using the formula;

ROI = {(TR-TVC)/TVC} *x* 100 …… (2)

Likert Scale

The perception of the women as regards their constraints was captured with the help of a 5-point Likert scale. The respondents rated the statements based on scores ranging from a minimum of 1 to a maximum of 5, whereby Strongly Agree (SA) = 5, Agree (A) = 4, Undecided (U) = 3, Disagree (D) = 2 and Strongly Disagreed (SD) = 1. The Mean Weighted Score

(MWS) is then calculated for each statement thus:

$$MWS = \frac{[(fSA*5) + (fA*4) + (fU*3) + (fD*2) + (fSD*1)]}{N}$$

Where:

MWS = Mean Weighted Score

f = frequency

Values 5, 4, 3, 2, 1 = Attached weights

N = Sample Size

RESULTS AND DISCUSSIONS

Inputs and outputs in groundnut processing

Table 1 shows inputs used and outputs realized in groundnut processing respondents. The inputs used include raw shelled groundnut, water, pepper, sugar, salt, firewood, kerosene and labour. In a processing cycle of about 2-3 days, the mean quantity of groundnut processed was 37.5kg. The average quantities of water, pepper and firewood were 11.25 litres, 0.03kg and 0.94 bundles respectively. The result further shows that some respondents do not use pepper, sugar, salt and kerosene. For the outputs, an average of 24.8kg groundnut cake and 17.6 litres of groundnut oil was obtained in every cycle of 2-3 days.

Table 1: Inputs and outputs in groundnut processing

Variable	Minimum	Maximum	Mean
Inputs			
Raw groundnut(kg)	12.5	62.5	37.5
Water(l)	10	30	11.25
Pepper	0	0.5	0.03
Sugar(kg)	0	2.5	1.5
Salt(kg)	0	0.5	0.375
Firewood(bundle)	1	3	0.94
Kerosene(l)	0	0.38	0.21
Labour (man-day)	1	3	1.20
Outputs			
Groundnut oil(l)	8.5	17.0	17.6
Groundnut cake(kg)	12	27.5	24.8

Profitability of groundnut processing

In order to determine the profitability of groundnut oil and cake production in the study area, the various inputs and outputs as well as the corresponding costs incurred and returns received were estimated. The result for the costs and returns analysis is presented in Table 2. The average total cost of processing was ₦9,219.05 and it was dominated by raw groundnut (₦7,125.00) that accounted for about 77% of the total variable cost. This was followed by labour cost (9.8%), then grinding and extraction cost (4.4%), while pepper had the least cost (₦1.8) accounting for 0.02% of total cost incurred in groundnut processing. The above result is expected since raw groundnut is the major input in the

production of groundnut oil and groundnut cake (*kuli-kuli*) while pepper is a spice that may be included only if desired in groundnut cake and in very small quantities. Iliyasu *et al.*, (2008), Ibrahim *et al.*, Napoleon and Ibrahim (2010), and Abdullahi *et al.*, (2017) reported similar findings. The high cost of groundnut which is a cash crop, has been attributed to the decline in its production due to negligence by the government since the discovery of petroleum in the 60's (World Geography of Peanut, 2013).

In terms of returns, an average revenue of ₦11,619.72 per processing cycle was obtained from groundnut processing. Groundnut oil gave higher returns of ₦6,160.0 accounting for 53.0% of the average gross returns while groundnut cake (*kuli-kuli*) accounts for the remaining percentage. Revenue from groundnut oil accounts for 67% of the total variable cost of processing. This implies that for the processors to cover up the variable costs and make sufficient profit, the groundnut oil and groundnut cake must be sold jointly. Iliyasu *et al.* (2008) also found that groundnut oil gave the highest returns of 60% while groundnut cake gave 40%. This indicates that groundnut oil is the major source of revenue in groundnut processing enterprise.

The result further shows that an average gross income of ₦2,400.67 per processing cycle of about 2-3 days was obtained in groundnut processing by the women. This means that in a month that has on the average 10 processing cycles, a revenue of about ₦24,006.7 was obtainable. This translates that the business was profitable, as further confirmed by the rate of return to investment of 26%, indicating that for every ₦1 invested in groundnut processing by the women, a return of ₦0.26 kobo was made. Although groundnut cake and oil production from the foregoing analysis is profitable, the level of return (profit) is low when compared to the findings of Ibrahim *et al*. (2010) and Samuel and Ocholi (2017) who revealed that the returns to investment of women groundnut processors were 67% and 43% respectively. The reason for low profitability could be as a result of low price paid for the products coupled with high cost of raw groundnut (Table 2). This has been corroborated by Abdullahi *et al*. (2017) who reported that major impediments to profit and market efficiency were inadequate capital, high cost of shelled groundnut and transportation costs

Table 2: Gross margin analysis from groundnut processing

Cost/returns components	Unit	Quantity	Cost/unit	Cost (₦)	%
A. Variable Cost	₦				
i. Raw groundnut	Kg	37.5	190	7,125	77.3
ii. Firewood	bundle	0.94	150	141	1.5
iii. Pepper	Kg	0.03	60	1.8	0.02
iv. Sugar	Kg	1.5	240	360	3.9
v. Water	L	11.25	1	11.25	0.1
vi. Transport	-	-	-	200	2.2
vii. Grinding & extraction	-	-	-	400	4.4
viii. Labour	man-day	1.2	250	900	9.8
ix. Kerosene	L	0.21	200	42	0.5
x. Salt	Kg	0.38	100	38	0.4
B. Total Variable Cost	₦	-	-	9,219.05	100
C. Revenue					
i. Revenue from cake	Kg	23.8	229.4	5,459.72	47.0
ii. Revenue from oil	L	17.6	350	6,160.0	53.0
D. Gross Revenue (Ci + Cii)	₦	-	-	11,619.72	100
E. Gross Margin (D-B)	₦	-	-	2,400.67 (24,006.7/ month)	
Return on Investment = 26%					

Level of Contribution of Women Groundnut Processing to Household Income

Table 3 shows the level of contribution of the women groundnut processing activities to their income. The results revealed that the respondents have an average household monthly income of ₦25,526.78 while average monthly profit from groundnut processing was ₦24,006.70. When income from groundnut processing activities of the women was compared against the total income, it was realized that groundnut processing contributed about 94% to the income of the women. The result therefore indicates that groundnut processing was a major source of income for the respondents. The Centre for Policy Dialogue (CPD) (2004) had similarly reported that rural women in Bangladesh contribute considerably to household income through farm and homestead production and wage labour. In another study by Sheheli (2012), it was reported also that the personal income of rural women through participation in various income earning activities significantly contributes to an increase in their household income which is consistent with the present study.

Table 3: Level of contribution of women groundnut processing to women income

	Women income	Income from groundnut processing
Minimum	2,000.00	2,000.00
Maximum	60,000.00	55,000.00
Mean	25,550.96	24,006.70
Std. Dev.	14,887.11	12,817.79
% contribution of processing to women income		94.0

Constraints Faced by Women Groundnut Processors

The women had high perception that 'profit margin is low' (MWS=4.37). This corroborates the profit calculated from groundnut processing businesses of the respondents (Table 2) and it could be attributed to high cost of raw materials (raw groundnut) and subsequent low returns from the products (groundnut cake and groundnut oil). The results also reveal that 'high cost of raw materials' (MWS=4.12) is another major constraint associated with groundnut processing. The women said that the major raw material in groundnut processing enterprise (raw groundnut) is very expensive.

Also, 'seasonality of demand for product' (MWS=3.98) was another constraint to their businesses. They said that there is higher demand for their products (especially groundnut oil) during festive period (*Sallah*, Christmas and wedding ceremonies) while sale of products is very low outside these periods.

Another major constraint perceived by the respondents is 'inadequate cash to sustain the business (MWS=3.94). The finding is a common characteristic of most enterprises that are ran by rural women especially when compared to their male counterpart. Studies (Ibrahim *et al*., 2010; Sani and Danwanka, 2011) confirm this finding. It was also indicated that the women perceived that 'Poor access to loans with low interest rates to run enterprise' (MWS=3.88) was a constraints. Other studies (Sheheli, 2012; Chah *et al.*, 2014) had similar findings that women are generally constrained with inadequate access to credit/loan. Therefore, if credit with low interest rates, and less bureaucracy and complexity are made available to the women, it will help in improving their enterprises and possibly lead to expansion.

They also perceived 'insecurity situation experienced in northern part of the country' as serious problem to their businesses (MWS=3.82). This is because most of the states affected by the insurgency (Borno, Yobe and Adamawa States) are major consumers of groundnut products. So due to the insecurity, there was serious reduction of sale in that end. Finally, 'tough competition by other processors' was reported as a threat by the respondents (MWS=3.61). The respondents believed that vegetable oil imported in the country in mass quantity poses a threat to their enterprises.

Table 4: Mean weighted scores (MWS) of constraints perceived by the respondents in groundnut processing

S/N	Constraint	MWS	Std. Dev.
i	Profit margin is low	4.37	1.07
ii	There is high cost of raw material	4.12	1.20
iii	Market demand for products is seasonal	3.98	1.29
	Inadequate cash to sustain the enterprise	3.94	
iv	Poor access to loans with low interest rates to run enterprise	3.88	1.38
v	Insecurity situation experienced in the country has affected production	3.84	1.28
vi	I do not have new ideas to make my business more innovative than my competitors'	3.61	1.41

CONCLUSION AND RECOMMENDATIONS

Groundnut processing by women in the study area had low profit though income from the enterprise predominantly contributes to their overall income. It was observed that the cost of raw groundnut was too high thereby a drawback to profit obtained. The study recommends the women to form cooperatives and buy the raw groundnut in bulk to take advantage of lower cost.

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