

Economics of Cashew Harvesting and Marketing in Oghe, Ezeagu Local Government Area, Enugu State, Nigeria

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Abstract

The study is on the economics of cashew harvesting and marketing in Oghe, Ezeagu Local Government Area of Enugu State Nigeria. The study described the socio-economic characteristics of cashew harvesters, including the costs and returns involved in cashew harvesting in the study area. It also examined the factors affecting marketing of cashew and the main constraints in the study area. Simple random sampling was adopted in selecting ten respondents from each of the six out of seven communities that make up the study area. This amounted to sixty (60) respondents. Data was collected through well-structured questionnaires and personal interviews data was analysed using simple descriptive statistics, net cash returns analysis and regression analysis. Socio-economic characteristics of harvesters showed that more than (50) fifty percent harvesters were above 40 years of age. More than (50) fifty percent of harvesters had at least primary education; fifty (50) percent of harvesters had harvesting experience of less than 11 years. An average profit of N88997.10 was made per hectare. The regression function showed that 92 percent of the variability of the output of cashew is explained by the variables age, harvesting in years, capital, labour and farm size. Age, harvesting in years, capital and labour were found to significantly affect the output of cashew. These variables were those that had the greatest impact on the output. Unfavourable market prices, high cost of farm input, low yield per hectare, poachers, inadequate storage facilities, pest and diseases were found to be the major constraints militating against the harvesting of cashew in the study area. The article recommended that small holder farmers should be encouraged to establish their own plantation in line with modern specifications. Harvesters should form cooperatives to obtain higher bargain for their cashew nuts. Time utility to be ensured through reliable storage and processing mechanism. It is also recommended that government should assist the farmers to expand their capital base by lowering interest rate on loan to farmers. This will provide the structure to expand output and increase employment.

Keywords

Harvesters, Capital, Labour, Variability, Time Utility

1. Introduction

Cashew (*Anacardium occidentale*) is a tree crop of considerable economic importance to Nigeria and other tropical countries. Apart from being a source of useful products for food and medicinal industrial application, cashew also provides useful shades. As an ornamental and alley tree, it is suitable for the control of soil erosion particularly in protection of water shade and dams. Cashew was introduced to Nigeria by Portuguese traders during 15th

and 16th century and since then it has flourished in a wild state [1].

Cultivation of cashew started in the early 1950's through the effort of the eastern Nigeria agricultural development. The initial objective of the programme was to use cashew trees for erosion control because of the massive erosion problem in that part of the country. The emergence of cashew nuts as a potential revenue earning commodity compelled the defunct Eastern and Western Nigeria government to start commercial plantation in most towns of these regions [2].

The majority of the exports produce from the quality nuts

came from the Eastern and Western part of the country. The main suppliers of these fruit are the peasants farmers who collect the nuts from the trees growing (sub) spontaneously in the area. Many of these farmers have however planted cashew trees around their houses or even have small groves of their own. The area under cashew is steadily increasing because of growing demands and rising prices and in addition to planting cashew in a small scale. Plantation scale cultivation has also started. The cashew apple is eaten as a raw fruit. Cashew is very rich source of ascorbic acid. The cashew apple is a valuable source of raw materials for the manufacture of both soft and alcoholic drinks [3].

The pulp of the apple is an admirable livestock feed. Cashew nut shell liquid (CNSL) is greatly valued in the international market as raw materials for brakes, clutch linings, paints and plastics. It is also used in agglutinants insecticides and fungicides [4]. The kernel constitutes valuable export products for confectionery and dessert purposes. They rank third after almonds and hazelnuts in the international trade of tree nuts. The kernels are highly appreciated in many countries where they are used as ingredients for marking fruits paste, candied fruit, canned fruit, fruit juice, cashew raisins, jams, jellies, chutneys, wine, alcohol, and vinegars [5].

The cashew itself has several uses including live fence, shade trees, firewood and charcoal. It has been planted to combat soil erosion and to reclaim marginal land. An extract a black dye can be made from its bark that is used locally for tattooing and tanning. According to Ayodele [6], perennial plants such as palm oil, cashew and cocoa spend 3-5 years on the farm only for vegetative growth and establishment. After that time, they spend reasonable years to continuously bear fruits and provide the farmer with a regular supply of income. In addition to this, they also ensure a balanced cycle of nutrients between the soil and the atmosphere with a micro climate that is more often than not highly desirable. Shittu and Asogwa [7] noted that pest and disease complex and malformation of the apple have negative implication for the cashew growing farmers. It is therefore necessary to examine economics of cashew harvesting and marketing to ascertain its viability. The specific objectives of the study are to

- i. describe the socio-economic characteristic of cashew harvesters in the study area.
- ii. determine cost and return involved in harvesting
- iii. determine the factors affecting marketing of cashew in the study area
- iv. determine the main constraints affecting marketing of cashew in the study area.
- v. make recommendation based on the findings

2. Material and Method

Cashew harvesting in the study area is carried out in six out of 7 communities that make up the study area. Simple random sampling was adopted to select 10 respondents in each of the 6 communities. Thus, a total of 60 respondents were involved in the course of the study. Primary data in

form of structured questionnaires and personal interviews constitute the major source of data collection. The questionnaires were administered to small scale harvesters. Personal interviews were conducted among some workers including government owned plantation such as Premier Cashew Industry Oghe. (PCIO).

The first objective was analyzed using descriptive statistics such as frequencies, means and percentages. Social economic characteristics examined such factors as: age, education, house hold size, farm size and harvesting in years. The second objective was assessed using net cash return analysis. In this method, total cost estimated was computed on per hectare basis for the farms. This was compared with the total revenue to determine the profitability of cashew harvesting.

The formula used for the second objective is as follows:

$$NR=TR-TC$$

Where

NR= net cash return from one hectare

TR= total revenue

TC= total cost

The third objectives was analysed by estimating the aggregate cashew determinants using ordinary list square method. The general implicit form of the model is

$$Y= F(X_1, X_2, X_3, X_4, X_5, ei) \text{ where}$$

Y= total output of cashew nuts (kg)

X₁= Age of farmers (years)

X₂= Harvesting in years (years)

X₃ = Farm size (hectares)

X₄= capital (N)

X₅= Labour (Man-days)

ei= error term

Four functional form of the model -linear, semi log, double log and the exponential function- was fitted to the data by method of ordinary least square. This was done to obtain the line of best fit.

3. Results and Discussion

3.1. Socio-Economic Characteristic of Cashew Harvesters

3.1.1. Age in Year

Table 1 show that about 33% of harvesters were below the age of 40 while more than 50% of the harvesters were above 40 years old. This implies that the elderly segment of the sample was involved in the cashew harvesting. This accounted for the fact that most of the cashew farms were inherited.

Table 1. Distribution of respondent according to Age.

AGE	FREQUENCY	PERCENTAGE (%)
21-30	10	16.67
31-40	10	16.67
41-50	30	50.00
>51	10	16.66
TOTAL	60	100

Source: Field Survey Data by author, 2011

3.1.2. Household Size

Table 2 shows the distribution of the respondent according to house hold size. The Table shows that about 3% of the harvesters have house hold members less than 3 members, while about 96% of harvester has house hold of between 3-11 members. This indicates that cashew harvesters had a moderately large house hold size. Having a larger house hold size creates the avenue for increased usefulness in farm labour; in other words more will be available to be engaged in farm labour.

Table 2. Distribution of respondent according to house hold size.

HOUSE HOLD SIZE	FREQUENCY	PERCENTAGE (%)
0-2	2	3.34
3-5	18	30.00
6-8	20	33.33
9-11	20	33.33
TOTAL	60	100

Source: Field Survey Data by author, 2011

3.1.3. Level of Education

Table 3 shows the distribution of the respondent according to the level of education. The Table shows that about 10% of the sample farmers had no formal schooling, while over 50% had at least primary education; this implies that most farmers in the area are moderately educated. This is essential because as the level education increases the level of ideas and innovation toward the enterprise will also increase.

Table 3. Distribution of respondent according to educational level.

LEVEL OF EDUCATION	FREQUENCY	PERCENTAGE (%)
No formal education	10	16.67
Primary education	30	50.00
Secondary education	20	33.33
Tertiary education	-	-
Total	60	100

Source: Field Survey Data by author, 2011

3.1.4. Harvesting in Year

Table 4 shows the distribution of the respondent according to the harvesting in years. Cashew farmers were found to fall within two categories in terms of harvesting in years. The first category was those who fell within the 0-11 years of harvesting experience. The second category has been in harvesting for greater than 21 years. The neglect of agriculture following the oil boom in Nigeria in the 1970s affected entrance of cashew able body individual into the farm sector. Interest was only rekindled after the deregulation in 1986 when government placed emphasis on exporting crop and promotion them.

Table 4. Distribution according to harvesting in years.

HARVESTING IN YEAR	FREQUENCY	PERCENTAGE (%)
0-10	30	50.00
11-20	-	-
>-21	30	50.00
TOTAL	60	100

Source: Field Survey Data by author, 2011

3.2. Cost and Return of Cashew Harvesting

The profitability of the cashew harvesting enterprise was ascertained by the analysis of its cost and the return. The analysis was based on the hectare of the cashew farm. The profitability of the enterprise was ascertained by the difference between the cost and the returns. The analysis of the cost and return are shown in the Table 5. The cost variables include: empty bags, basket, record book, land and capital. The mean rent value on land was N4625 per hectare in the study area. Since farmers in the area rarely use chemical inputs such as fertilizer, herbicide and pesticide, their cost were ignored. Labour accounts for about 80% of the total cost of production on the farm, indicating that cashew production are labour intensive. The gross margin and net cash return were N95878.96 and N88997.10 respectively showing that cashew harvesting was profitable. This is in line with Oduwole *et al* [8] where an economic analysis of investment in cashew enterprise indicated that it is highly profitable.

Table 5. Cost and return of cashew harvesting.

ITEM	QUALITY	UNIT PRICE N	TOTAL VALUE (N)
TOTAL REVENUE*	3583kg	42.12	150,915.96
Variable Cost			
Empty bags	47 (units)	80	3760
Baskets	14 (units)	100	1,400
Record book	1 (units)	25	25
Labour/Man days	169	295.00	49,855
Total var. Cost**			55040
Gross margin (*minus**)			95875.96
Fixed cost			
Rent on land			4625.00
Depreciation			2252.86
Total fixed cost***			6878.86
Total cost of harvesting***+***			61918.86
Net cash return (*minus**)-***			88997.10

Source: Field Survey Data by author, 2011

3.3. Determinants of Cashew Harvesting

Table 6 showed the result of the econometric model specified to identify the factors affecting the output of cashew industry in the study area. The semi log functional form was chosen as the lead equation. The choice of the lead of the equation is based on the R^2 value and the numbers of variable significant including *a priori* expectation. The semi log functional form was able to capture the highest percentage of variability in the output of cashew. Ninety eight (98%) of the variability in the output of cashew was explained by the variable included in the model. Equally, the F value shows that the equation is significant at 1%. Four variable-ages, harvesting in years, capital and labour are significant variables explaining the variability of the output of cashew.

Age is significant at 1% and positively influences the output of cashew. This can be explained by the long gestation period of cashew. Older people because of their long ownership obtain higher output. It equally implied that older people are more experienced and would make more impact in the cashew business. More experience come with new innovations and ideas to project an exportable commodities.

This result is in line with the one obtained in the socio-economic analysis where more than 50% of the respondents were above 40 years old. The length of time the respondents were in harvesting business was also highly significant and positive in explaining the output of cashew harvesters. This implies that experience has lots to do in obtaining higher output level.

Table 6. Determinants of cashew harvesting.

Variable	Functional Forms			
	Semi- Log	Exponential	Cobb-Douglas	Linear
	Function	Function	Function	Function
Constant	-111.261 (-9.565)	-3.894 (-4.888)	-19.968 (-5.026)	-16.355 (-7.034)
Age (X_1)	6.968xxx	6.831E-02xxx	2.733xxx	0.144xxx
Harvesting In years (X_x)	15.122xxx (4.698)	0.157xxx (3.658)	2.879xx (2.618)	0.871 (6.954)
Farm size (X_3)	-1.088 (-0.614)	-0.115 (0.547)	-0.434 (0.718)	-0.336 (-0.550)
Capital (X_4)	4.088xxx (6.329)	6.461E-05 (1.423)	0.1243 (1.100)	7.972E-04xxx (6.014)
Labour (X_5)	3.601x (1.893)	-1.425E-03 (-0.372)	0.3320 (0.492)	-2.934E-03 (-0.263)
R ²	0.982	0.651	0.694	0.919
R- ²	0.922	0.619	0.666	0.911
F- value	140.160xxx	20.159xxx	24.512xxx	122.370xxx

() = value in bracket is the t-ration

Xxx= significant at 1%

Xx= significant at 5%

X =significant at 10%.

Source: From regression analysis, 2011

Capital was highly significant and positively influencing the output of cashew. The higher the investment in capital assets in the enterprise the more output can be obtained. This is important because cashew is a potential export commodity. Effort should be made to invest more in growing and harvesting of the crop. This is in line with Shoo [9] who opined that availability of capital and loans from banks will impact positively on cashew enterprise

Labour is significant at 10% and positively influences the output of cashew. This is explained by the fact that cashew product is labour intensive enterprise. The item of labour includes, pruning, harvesting and slashing, path upkeep and boundary up keep, drying, sorting of nuts and bagging. If these operations are not carried out on time, it affects negatively the output. Thus labour is vital in the harvesting operation. Analysis of cost and returns previously done also showed that labour was very significant occupying almost 80% of the total variable cost. This showed that the cashew industry is very important as regards employment opportunity. As the business expands more people will be employed. This is in line with Meitzner and Price [10] who reported that the enterprise provided employment to 2,000 families in 1987.

3.4. Constraints to Output of Cashew Harvested

Table 7 presented some constraint limiting cashew harvesting in the study area. Method of multiple response

technique was used to identify the major constraints to the output of cashew. Those highly limiting harvest include unfavourable market prices, high cost of farm inputs, and low yield per hectare, poachers, inadequate storage facilities, pest and disease. Discussed below are those of high significance.

Table 7. Constraints of cashew harvesting.

CONSTRAINTS	FREQUENCY	PERCENTAGE (%)
Unstable governmental policy	30	7.5
Unfavourable market prices	60	15
High cost of chemical input	60	15
Low yield per hectare	60	15
Land ownership system	10	2.5
Poachers	60	15
Inadequate storage facilities	60	15
Pest and disease	60	15
Total	400	100

Source: Field Survey Data by author, 2011

High Cost of Chemical Input

High costs of chemical inputs like fertilizer pesticide and herbicides, which help to boost productivity, have made the cashew harvesters to consider the inputs as unimportant thereby denying themselves of the benefits that would have accrued as a result of their use. If these inputs can be made available to the dealers, output would increase.

Pest and Disease.

Because the harvesters are handicap in the area of purchasing chemical inputs like pesticide, pest and disease

account for about 68% lost in the potential yield. Output of the harvesters before and after harvest [7]

Inadequate Storage Facilities

There is a wide variation in the prices of the cashew from January to July. This is as a result of inadequate storage facilities it. This is made worse by the poor infrastructural facilities in the country. It therefore become difficult for the cashew farmers to store and sale at a time nuts would fetch them higher prices; and also a time when the consumers would appreciate the delivery.

Poachers

The nefarious activities of poachers are capable of liquidating cashew enterprise. Their activities can be checked by adding more inputs of labour as security men in the farm. This will however depends on whether or not the farm can match marginal revenue with marginal cost or marginal value product with marginal input cost.

Unfavourable Market Prices

Cashew harvesting in this area is largely from unimproved varieties. Nuts produced from such do not command high price in local and international market. Small nuts are produced which attracts unfavourable market prices.

4. Conclusion

The study reveals that cashew harvesting is highly profitable despite the many attendant factors that constitute constraint to harvest. These factors are: high cost of inputs, pests and diseases, inadequate storage facilities, poachers and unfavourable market prices. Cashew has the potential to increase the incomes of poor famers to create employment opportunities during harvesting and to increase export earnings. In addition, age of harvesters, harvesting in years, capital and labour were variables that significantly and positively affected the output of cashew. The study also showed that cashew farming in the area is predominantly traditional in practice.

Recommendation

Based on the findings, it is recommended that government should assist the farmers to expand their capital base by lowering interest rate on loan to farmers. This will provide

the structure to expand output and increase employment.

In order to improve the harvesting of cashew, government should encourage small holders to establish their own plantation along modern specification.

To solve the issue of unfavourable market prices, harvesters should form cooperative societies to obtain higher bargain for their cashew nuts. Cooperatives would then ensure quality control for their commodity.

To solve the problem of poaching of nuts from farm, licenses for buying cashew nuts should be issued by the cooperatives from one source to step up security during the buying/harvesting season in order to avoid banditry (or poaching of nuts from farms).

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