NIGERIAN AGRICULTURAL JOURNAL
ISSN: 0300-368X
Volume 50 Number 1, April 2019. Pp.85-91
Available online at: http://www.ajol.info/index.php/naj

EMPIRICAL ESTIMATES OF DETERMINANTS OF NET-RETURNS AMONG CASHEW NUT MARKETERS IN UMUAHIA AGRICULTURAL ZONE OF ABIA STATE NIGERIA

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ABSTRACT
The study analysed the cost and returns of cashew nut marketing in Umuahia North and South local Government Area of Abia State Nigeria. Specifically, the study examined the marketing margin, net return, determinants of net returns and constraints that militated against the business. Data were collected through the use of questionnaire. A purposive sampling of five (5) markets was made based on the level of marketing activities of cashew nut sold in these markets. Fifteen (15) cashew nut marketers were randomly selected from each of the markets and a total of seventy- five (75) cashew nut marketers were selected for the study. Data collected were analysed using percentages, marketing margin, cost and return and regression model. Result shows that the business was profitable. Among the determinants of net return were marketing experience, quantity of cashew nut sold and level of education. The major constraints identified by the marketers were, inadequate credit supply, instability of prices and others. The study recommends that marketers should form cooperatives which could increase their access to credit from financial institutions. Marketers should also be encouraged to acquire more education to enable them access and process information on marketing innovations.

Keywords: Economics, cashew nut, marketing, cost and returns

Introduction

Anacardium occidentale is a fast growing, hardy and drought-resistant multipurpose tree. It has a very good adaptability to wide ecological differencess hence, cultivated in many tropical countries (Hammed, 2008). It is one of the most well-known species for its nut in the world. It is an important tropical tree crop that ranked second or third in terms of international trade for major edible nuts. It originated from Brazil and spread through the exploration of the Portuguese to Indian and other countries where it is grown today. India is the highest producer and exporter of cashew kernel, accounted for over 65 % of the world export (Balamurugan *et al.*,2011). Nigeria is not left out in cashew production and export. Nigeria produces 120,000 tons of cashew annually. She is the largest producer in Africa after Côte d'Ivoire and Tanzania and the 7th largest producer in the world. (Joker, 2003). Cashew is the third agricultural export crop of foreign exchange for Nigeria; it earned Nigeria $110 million in 2013 which represent about 10% of agricultural export for Nigeria Export Promotion Council (NEPC, 2015). Cashew fruit is a special fruit for its peculiarity. It has an apple that housed the nut that is kidney-shaped at its base unlike other fruits that house their seeds inside the soft part of the fruit. Apart from the juice of the apple that is rich in vitamin C and sugar which can be fermented to produce alcoholic drink, the cashew nut is known to contain the fat soluble vitamins A, D, K and E to the level of 200-2100mg/100g (Opeke, 2005). The cashew nut kernel has three different portions: the shell, the kernel and the adhering testa. The primary product of cashew nuts: the kernel, which is the edible portion of the nut is consumed in three ways: directly by the consumer as roasted and salted nuts, in confectionery and bakery products.

Cashew nut is a popular desert eaten out of hand; with other mixed nuts, it is used in baking and confectionaries and about 60% is eaten as salted nut (Rosengarten, 1984). It is also made into cashew butter and nut milk. For instance, finely chopped kernels are used in the production of sweets, ice creams, paste to spread on bread, cakes and chocolates, both at home and industries. The cashew nut shell contains a viscous and dark liquid, known as cashew nut shell liquid (CNSL), which is extremely caustic. It is used as raw material for phenolic resins and friction powder for automotive industry (FAO, 2000). Despite the potentials of cashew crop and its products, its production and marketing are still in the hands of farmers and marketers who are constrained with

inadequate capital for both production and marketing. Marketing is defined as a management process responsible for anticipating, identifying and then satisfying consumer wants and needs with a view of making profit. It is a vital aspect of agriculture since agricultural products are highly perishable. It therefore requires urgent disposal or processed into forms that can be stored for future sales and use thereby providing the utility of form and time. Marketing functions are performed by marketing agents that add value (utility) to the products. Marketing agents earn income from the function performed through the creation of these utilities. This they realized through a margin between their purchasing price and selling price as the product moves along the marketing chain. These agents will only remain in business when they make profit which is the difference between total revenue and total cost incurred in the course of business transaction. Hence this study estimates the cost and return of cashew nut marketing in Umuahia Agricultural Zone

Methodology

The study was carried out in Umuahia North and South Local Government Areas of Abia State, Nigeria. Umuahia North is located along the rail road that lies between Port Harcourt and Umuahia South and Enugu city to the North. It lies approximately on latitude $5^0 32^/$N and longitude $7^0 29^/$ E. The people of Umuahia North and South are business oriented, so the major economic activity in the study areas is mainly buying and selling. More so the inhabitants are urban and peri-urban dwellers most of whom are civil servants and traders. They are also farmers both full time and part-time for the civil servants. A 2-stage random sampling techniques were used for the study. The first stage involves purposive selection of five markets where cashew nuts are sold in large quantities. The selected markets were Isi-gate, Ubani, Apumiri, Ubakala, and Umuopara. The second stage involves random selection of 15 cashew nut marketers from the selected markets. A total of 75 cashew nut marketers were sampled for the study. Data for the study were collected with the aid of questionnaire that was administered to the marketers. Objective one on socio economic characteristics was achieved using descriptive statistics. The second and third objectives on marketing margin and net return were realized with the use of the formular as used by Olukosi *et al.*,(2005) and Obasi *et al.,* (2012) and are stated thus:

$$Marketing\ Margin\ (MM) = \frac{Sp - Pp}{Sp} \times \frac{100}{1} \qquad (1)$$

Where,
SP is the selling price and Pp is the purchasing price.
MM is the Marketing Margin
TMC is the Total Marketing Cost

Net Return (NR) =
Total Revenue (TR) – Total Marketing Cost (TMC) (2)

Objective three on factors that influence net returns of the marketers, was realized using multiple regression analysis and the model is specified explicitly as thus:

$$Y = (X_1, X_2, X_3, X_4, X_5, X_6, X_7 X_8 X_{9+e}) \qquad (3)$$

Where,
Y = Net returns (₦)
X_1 = Age of respondent (years)
X_2 = Level of Education (years)
X_3 = Cost of transportation(₦)
X_4 = Quantity of cashew nut sold (kg)
X_5 = Selling price of cashew nut (₦)
X_6 = Household size (number)
X_7 = Sex (Female=0, Mame=1)
X_8 = Marketing experience (years)
X_9 = Purchase price of substitute product (₦)
e = error term

Results and Discussion

Socio economic Characteristics of Cashew Nut Market

The socio economic characteristics of cashew nut marketers in the study area are presented in Table 1. The result in Table 1 showed that majority of the cashew nut marketers fell within the age range of 21-30 with a mean age of 29 years. The result shows that majority of the marketers sold the product along the high ways. The respondents were still active thus they were able to withstand the stress of hawking the product on the street and high ways. The work is in agreement with the findings of Salau *et al*., (2017) who reported a mean age of 33.5 years. Furthermore, the result shows that marketers had a mean household size of 5 persons. This implies that the marketers had a relatively small household size. This work corroborates the finding of Salau *et al*., (2017) who posited that cashew nut marketers had a mean household size of 6 persons. More so the result shows that majority (72%) of the respondents were female. This implies that female marketers dominated the business of cashew nut marketing. The study contradicts the findings of Oladejo, (2015) who posited that (91.7%) of cashew marketers were male. On education, majority of the marketers were educated (82.7%) had one form of education or the other but majority of them had secondary education while 17% had no form of education at all. This implies that marketers were literate and it helps them to improve on their marketing activities. Salau *et al., (*2017) obtained similar findings that cashew nut marketers in the study area were educated. The result further shows that majority (57%) of the respondents were single. This necessitated the mean age of 29 years obtained in the study area. However, the study also contradicts the finding of

Oladejo, (2015) who reported that cashew nut marketing was dominated by married people. The study shows that marketers had a mean marketing experience of 6 years. This implies that the marketers were relatively experience and thus can be able to handle some of the challenges that could arise from the business.

Net- return, Marketing Margin of Cashew Nut Marketers

Table 2 shows that the average purchasing price per kg of cashew nut was ₦755.88 and a selling price was ₦887.5/kg. The total return from cashew sales was of ₦ 52,114, while the total variable cost incurred was ₦ 46314.16 which constitutes 98.54% of the total cost of marketing cashew nut in the study area. The total fixed cost was ₦686.25; this fixed cost was arrived at after depreciation. A total cost of cashew nut marketing was ₦ 47000.41. The net return for study was ₦ 5113.59. This implies that cashew marketing was profitable. The findings are similar to the findings of Adeio, *et al.*, (2018) who reported that cashew nut marketing was profitable. A marketing margin of 14.83% was obtained. Olukosi *et al.*, (2005) posited that marketing margins of 5 and 10 percent are acceptable for perishable and storable produces respectively. This implies that marketers were able to make margin that was adequate enough for them to make profit hence remained in business. The result is similar to the findings of Salau *et al., (*2017) who estimated a marketing margin of 12.3% and inferred that cashew nut marketing was profitable in the study area. The result further shows that rate of return on investment was 1.1. This implies that for every one naira invested on cashew nut marketing, a return of ₦1.1k accrues to the marketers. Oladejo (2015) also reported that marketers obtained a rate of return on investment of 1.2 in the study area.

Determinants of Net Return (Profit) of Cashew Nut Marketing in the study area

The regression estimate of the determinants of net returns from cashew nut marketing is presented in Table 3. The result shows that linear functional form was chosen as the lead equation based on R^2 value, number of significant variables and *a priori* expectation. The R^2 value which is the coefficient of multiple determination of 0.830 was estimated. This implies that 83% variability or total variation in net returns was explained or accounted for by the independent variables. The F-ratio has a value of 4.89 and was highly significant at 1% level of probability indicating goodness of best fit.

Among the nine (9) variables fitted in the model, seven (7) were statistically significant. The significant variables are level of education (X_2), cost of transportation (X_3), Quantity sold (X_4), selling price (X_5), Gender (X_7), Marketing experience (X_8) and price of substitute (X_9). The coefficient of education was positively related and significant at 10% level of significance. These imply that increase in the level of education of the marketers will in turn lead to increase in the net income (Y) of the marketers. The study is in tandem with the findings of Offor *et al.,* (2017) who noted that as the educational level of marketers' increases, the more the marketer can embrace new marketing technologies and increase the net return of the marketers. Cost of transportation was significant at 10% but negatively related to net return. This implies that as transportation cost increases the net return from cashew nut marketing also reduces. This study is in consonance with the findings of Salau *et al.,* (2017) who reported that transportation cost reduces the net returns from cashew nut marketing in the study area. The coefficient of quantity of cashew nut sold had a positive relationship and was significant at 1% level. This implies that as quantity of cashew nut sold increases, the net return from cashew nut enterprises increase. This conforms to *a priori* expectation that the higher the quantity of a product sold the higher the net returns from the business all things being equal. This is similar to the findings of Oladejo (2015) who reported that quantity sold of cashew nut had positive influence on the net return of cashew nut marketers.

Selling price was positively signed and significant at 5% level to net income (Y). This implies that the higher the selling price of cashew nut the higher the net return from the cashew nut marketing. This is in line with *a priori* expectation that the higher the marketing price, the higher the net return. Gender had positive relationship to net income (Y) and was statistically significant at 1%. This implies that their male counterparts had more returns from the business because the males are stronger, energetic and engage in more aggressive marketing than the females due to the stress full nature of the business that involves hawking a long distance. The coefficient of marketing experience was positively signed and was significant at 1% level of significant. This is as expected and conforms to *a priori* expectation. This implies that as marketing experience of the marketers increases with number of years spent in the business, the net return also increases, hence marketing experience enhance performance. The coefficient of price of substitute was negatively or inversely related to net income (Y) and statistically significance at 1%. This implies that as price of substitute increase, the net return from cashew nut reduces. This conforms to *a priori* expectation. This is because as substitute goods price increase, few of the substitute products will be purchase and as such income from the business will be reduced.

Constraints that militating against Cashew Nut Marketing in the Study Area

The constraints that militated against cashew nut marketing as identified by the marketers in the study

area is presented in Table 4. The result shows that 69.33% of the sampled respondents identified lack of credit facilities as the major problem facing cashew nut marketers. Also 57.33% identified insufficient capital as a problem. This implies that finance (fund) is the most limiting factor to cashew nut marketing. More so price instability and inadequate supply due to seasonality of the product were identified as constraints that faced the marketers in the business of cashew nut marketing. The findings corroborate the work of Oladejo (2015) and Olife *et al.*, (2013), who reported that marketers identified inadequate financial availability as the major constraint that confronted the business enterprise. Other constraints the marketers identified were bad road and high cost of transportation, law enforcement agent. However, the later had no much effect on the marketing of cashew nut marketing.

Conclusion

The study investigated the cost and returns of cashew nut marketing in Umuahia Agricultural zone, Abia State. The result shows that cashew nut marketers were in their active age, female counterparts dominated the business and they were mainly single. The enterprise of cashew nut marketing was profitable. The marketers had average net return of ₦5113.6. The results of the multiple regression shows that factors such as educational level, quantity sold, selling price and marketing experience increased the net returns of the cashew nut marketers while variables such as transportation cost and price of substitute decrease the net income of the marketers. Among the major constraints identified in the study area were lack of credit facilities and insufficient capital. The study therefore recommends that marketers should form cooperatives that could increase their access to credit and enhance fund availability. Marketer should also be encouraged to acquire more education to enhance access to information on marketing innovations.

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Table 1: Socio- economics characteristics of cashew nut marketers in the study area

Age	**Frequency**	**Percentage%**
<20	19	25.4
21-30	30	40.0
31-40	14	18.6
41-50	8	10.7
>50	4	5.3
Mean	29.4	
Total	75	100.0
Household Size		
1-3	32	42.7
4-6	15	20.0
7-9	26	34.7
Mean	5	
Total	75	100.0
Gender		
Male	21	28.0
Female	54	72.0
Total	75	100.0
Year of Education		
No formal education	13	17.3
Primary education	20	26.7
Secondary education	34	45.3
Tertiary education	8	10.7
Total	75	100.0
Marital Status		
Single	43	57.3
Married	29	38.7
Separated	2	2.7
Widowed	1	1.3
Total	**75**	**100.0**
Gender		
Male	21	28.0
Female	54	72.0
Total	75	100.0
Marketing experience		
1-5	38	50.7
6-10	33	44.0
>11	4	5.0
Mean	6	
Total	75	100.0

Source: Field Survey, 2016

Table 2: Average cost and return, marketing margin of cashew nut marketing in the study area

	Items	Mean value (₦)
A	Cost	
	Variable cost	
	Transportation	305.3
	Purchase price (kg)	755.88
	Quantity bought 58.72 (kg)	
	Total purchase price	45559.67
	Storage cost	261.8
	Nylon cost	120.82
	Marketing charges	400.57
	Feeding	840.40
	Total variable cost	46314.16
	Fixed cost	
	Wheelbarrow	4800.06
	Tray	260.8
	Table	1200
	Cup	40.8
	Total fixed cost	6301.66
	Provision for Depreciation (D) (10%)	56.08
	Contingencies (C) (10% of FC)	630.17
	Total D and C	686.25
	Total cost	47000.41
B	Return	
	Selling price	887.5
	Quantity sold 58.72 (kg)	
	Total returns	52114
C	Marketing margin	14.83
D	Net return	5113.59
E	Rate of return on investment	1.1

Source: Field Survey Data, 2016

Table 3: Regression estimates of the determinants of net returns of cashew nut

Variables	Linear +	Semi Log	Double Log	Exponential
Constant	-12.98	926.08	0.84	0.30
	(-4.78)***	(2.86)**	(2.03)*	(3.88)***
Age (X_1)	2.60	0.30	0.82	0.25
	(0.88)	(0.24)	(1.09)	(0.03)
Level Edu. (X_2)	0.91	0.62	0.32	0.28
	(1.84)*	(0.94)	(0.63)	(1.80)*
Cost of Transport (X_3)	-0.22	-.082	-0.33	-0/29
	(-1.71)*	(1.09)	(0.88)	(0.90)
Quantity sold (X_4)	0.53	0.02	0.92	0.10
	(6.30)***	(3.06)***	(1.98)*	(2/08)*
Selling Price (X_5)	0.41	0.80	0.32	0.29
	(2.60)**	(214)*	(0.83)	(2.80)**
HHS (X_6)	0.40	0.31	0.41	0.01
	().32)	(1.01)	(1.61)	(0.82)
Gender (X_7)	0.10	0.83	0.80	0.72
	(2.93)***	(2.70)*	(1.06)	(1.94)*
Experience (X_5)	0.85	0.04	0.76	0.09
	(5.04)***	(2.60)**	(2.99)***	(0.60)
Price of Sub (X_9)	-0.85	-0.38	-0.23	0.22
	(-4.89)***	(1.94)*	(1.99)*	(0.90)
R^2	0.830	0.63	0.59	0.60
R^{-2}	0.810	0.58	0.54	0.56
F-Value	(4.89)***	(8.80)***	(5.08)***	(3.80)***

Source: Survey Data, 2016

Figures in parenthesis are t ratios, *** significant at 1%, ** significant at 5%, * significant at 10%, +=lead equation

Table 4: Constraints militating against cashew nut marketing in the study area

Constraints	Frequency	Percentage	Rank
Lack of credit facility	52	69.33	1st
Insufficient capital	43	57.33	2nd
Price instability	40	53.33	3rd
Seasonality of commodity	40	53.33	3rd
Inadequate supply	28	40.00	4th
Bad road	25	37.33	5th
High cost of transportation	23	30.67	6th
Low demand for cashew nut	20	26.67	7th
Storage /spoilage	15	20.00	8th
Law enforcement agent	12	16.00	9th
Total	120*		

Source: Field Survey, 2016. Total frequency exceeded sample size because multiple responses were taken.