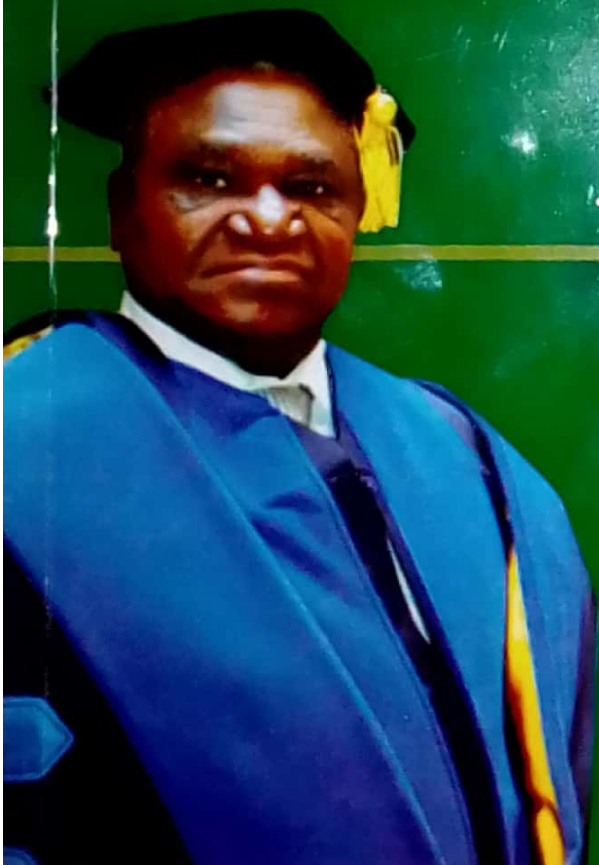




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Agricultural Economics and Extension: Activity II

ECONOMICS ANALYSIS OF SUGARCANE MARKETING IN NIGER STATE

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INTRODUCTION

Sugarcane belongs to the Poaceae family. The principal product of sugarcane is disaccharide (majorly sucrose), that accumulates within the stalk internodes. Sucrose, extracted and refined in specialized mill factories is employed as stuff in human food industries or is processed to make ethyl alcohol. It is native to the nice and cozy temperate to tropical regions of South Asia, and is used for manufacturing sugar. In 2012, FAO estimates it was cultivated on about 26.0 million hectares, in more than 90 countries, with a harvest of 1.83 billion tons globally. Brazil was the major producer of sugarcane in the world. The world demand for sugar is the primary driver of sugarcane production. Sugarcane (*Saccharum officinarum*) contributes 80% of the overall world sugar demand whereas the remaining 20% came from sugar beet (Godheja, et al., 2014). Aside from sugar, merchandise derived from sugarcane are *falernum*, *molasses*, *rum*, *cachaca* (an ancient spirit from Brazil), pulp (*bagasse*) and ethyl alcohol (Godheja, et al., 2014). It takes 8-12 month to achieve maturity with 3-4 meters tall. Green, yellow, violet or scarlet colorations are noticed for matured sugarcane and conjointly thought of ripe once sugar content is at its peak (Sulaiman et al., 2015).

Nigeria is blessed with land that supports the cultivation of sugarcane with a potential of over 500,000 hectares of cane fields; capable of manufacturing over five million metric tons of sugarcane, once processed, these will yield up to three million metric tons of sugar. However, this is not so as majority of the consumed sugar in Nigeria are still imported and no less than ₦20 million will be continually spent on importation annually if native production of sugar isn't inspired and improved (The will, 2014; Sulaiman, 2015). It is important to know that one of the inhibiting factors to increased production according to literature is non-efficient marketing systems. As it is with most agricultural products, Sugarcane is it is highly degradable and perishable. As a result, an efficient market by which products can be translated to the final consumers in the most cost-effective manner is highly needed. However, in Nigeria, there are persistent symptoms of poorly functioning markets evident by segmentation, low market infrastructure, high price margins and the slow movement towards a more efficient arrangement in Nigeria (Phillips et al., 2008). Eneji and Akwaji (2018) argued that the dwindling agricultural production in Nigeria is a confirmation of its unattractiveness.

There are low returns to effort and compensation being paid to farmers. Majority of the producing farmers are small-scaled, informal and unorganized. They do not have sufficient knowledge and skills for the marketing of their produce. And in the absence of well-developed markets, marketing facilities, and marketing knowledge, farmers are disadvantaged by selling their products as they get low prices for their efforts.

Therefore, this study was conducted in order to analyze the economics of sugarcane marketing in the study Niger State, the hub of sugarcane production in Nigeria. The specific objectives are to:

- a) determine Sugarcane marketing margins in Niger State;
- b) examine the marketing efficiency of sugarcane in Niger State;
- c) analyse the factors influencing sugarcane marketing in Niger State and
- d) examine the constraints associated with the marketing of sugarcane in the study area

METHODOLOGY

The Study Area

Niger State is located in north-central geopolitical zone of Nigeria. It occupies a land area of 29,484 square miles (76,363 square km) and has a Population of 3,950,249 (NPC, 2006). It is bounded to the south by the Niger River. It is also bounded by the states of Kebbi and Zamfara to the north, Kaduna to the north and northeast, Kogi to the southeast. The landscape consists mostly of wooded savannas and includes the floodplains of the Kaduna River. Most of the inhabitants are engaged in farming. Cotton, shea nuts, yams, and peanuts (groundnuts) are cultivated both for export and for domestic consumption. Sorghum, millet, cowpeas, corn (maize), tobacco, palm oil and kernels, kola nuts, sugarcane, and fish are also important in local trade. Paddy rice is widely grown as a cash crop in the floodplains of the Niger and Kaduna rivers, especially in the area around Bida. Cattle, goats, sheep, chickens, and guinea fowl are raised for meat. Pigs are raised around Minna for sale to southern Nigeria.

Sampling Procedure and Sample Size

Snow ball sampling technique was used to select 120 sugarcane marketers. Data was collected with the aid of a semi-structured questionnaire. The instrument for data collection was subjected to close examination by experts in the field of Agricultural Economics and farm Management in the University of Ilorin to ensure content validity.

Method of Analysis

Data collected from the field survey was subjected to descriptive Analysis for the socio-economic characteristics, marketing function and value-added activities. Simple descriptive statistic involving the use of frequency counts, percentages, charts, mean and standard deviation was used to present the findings from the study.

Marketing Margin

Marketing margin is the difference between the value of the commodity when it is ready for sale from the farm (cost price) and its value when it is finally bought by the customer (selling price). It can be estimated as:

Gross marketing margin = selling price – cost price

Net marketing margin = gross marketing margin - marketing cost

Marketing cost = Cost of transportation, storage, cleaning, rent and all value adding additives including losses

Marketing efficiencies

Marketing efficiencies is the measure of the overall performance of sugarcane marketing. It is the ratio of marketing output over marketing input. It is given as:

$$\text{Marketing efficiency (ME)} = \frac{\text{Net marketing margin}}{\text{Total marketing}} \times 100$$

Ordinary least square (OLS) regression

Factors influencing marketing efficiencies of the sugarcane marketers was measures using OLS regression. Implicitly, this is given as:

$$Y_i = f(X_{1i}, X_{2i}, X_{3i}, X_{4i}, X_{5i}, X_{6i}, X_{7i}, X_{8i})$$

Y = Marketing efficiency of the ith farmer (percentage), X_1 = Age (Years), X_2 = Household size (Numeric), X_3 = Years of formal Education (Years), X_4 = Membership of cooperatives (Membership =1, Non-members =0), X_5 = Marketing Experiences (Years) X_6 = Selling Price (Naira), X_7 = Input cost (Naira), X_8 = Quantity sold (Kg)

Likert scale

Likert scale was used to evaluate the constraint faced by the marketing of sugarcane. A five -point Likert-type scale was used to access this. Likert Scale was used to attribute quantitative value to qualitative data to make it comply with statistical analysis. Five -point Likert-type rating scale was Very serious – 4, Moderately serious – 3, Mildly serious – 2, Not serious – 1.

A weighted average index (WAI) analysis was then estimated using the Formula:

$$WAI = \frac{F_1W_1 + F_2W_2 + F_3W_3 + F_4W_4}{F_1 + F_2 + F_3 + F_4}$$

Where: F= Frequency; W= weight of each scale; i=weight; Wl= weighted index

RESULTS AND DISCUSSIONS

Socio-Economic Characteristics of Respondents

Table 1 shows the household's socio-economic characteristics such as age, gender marital status, level of education, household size, numbers of years spent in school.

Table 1: Socio-Economic and Demographic Characteristic of the Respondents

Age	Frequency	Percentage	Mean	Std Dev
Age				
≤30	11	9.2		
31-40	29	24.1		
41-50	45	37.5	46.0	11.3
51-60	26	21.7		
Above 60	8	6.7		
Gender				
Male	71	59.17		
Female	49	40.83		
Marital status				
Single	20	16.67		
Married	96	80.00		
Divorce	1	0.83		
Widow/widower	3	2.50		
Education				
Non formal	13	10.83		
Primary	37	30.83		
Secondary	58	48.33		
Tertiary	12	10.00		
Number of years spent in School				
0-6 years	50	10.83		
7-11 years	58	30.83		7.28
12-18 years	9	48.33		8.28
19 years and above	3	10.00		
Household size				
≤5	55	45.8		
6-10	62	51.7	5.9	
Above 10	3	2.5		
Total	120	100.0		

Source: Field Survey

The result in Table 1 shows that the mean age of the respondents was about 46 years. This means that the highest proportion of the respondents were still young and active. These findings corroborate the result of Chand et al., (2017) who reported that the mean age of sugarcane marketers in parbani district of Maharashtra India was 46 years. The result also showed that 59.17% were male while 40.83% were female. The majority of the respondents (80%) were married. This could imply an increased access to family labour and could also indicate that the household head is responsible for some number of members. Majority (48.3%) has secondary education with only 10.8% having no form of formal education. This connotes a high level of literacy among the sugarcane marketers. Finally, the mean household size was 6. This means that most of the respondents have a fairly moderate family which may serve as a source of labour on their businesses. This could also be a push to intensification as the household head will seek to meet the family needs.

Budgetary Analysis

Table 2 shows the marketing margin and efficiency analysis. It showed that the sugarcane marketers on average handled 4943.604kg/year of product and the average price that this product was sold per kg was estimated at ₦80.21. This amounts to a total revenue of ₦396,540.18 per year.

Table 2: Marketing margin and efficiency analysis

Budget analysis	₦/Year
Quantity of product handled	4943.604 Kg
Price sold per kg	₦80.21
Total revenue	396,540.18
<u>Variable cost</u>	
Loding	15,406.73
Off-loading	10,699.81
Stock purchased	18,633.69
Rent	6,500.28
Transport cost	42,250.8
Miscellaneous	18,790.67
Total (Cost price)	112,281.98
Marketing margin	284,258.2
Marketing efficiency	71.68%
Source: Field Survey	

Variable cost which includes loading, off-loading, stock purchased, rent, transport cost and miscellaneous amounted to ₦112,281.98 per year. This gives a marketing margin

of ₦284,258.2/year. The marketing efficiency was also calculated as 71.68% meaning the rate at which products are translated to revenue is at 72%. Therefore, this enterprise is profitable.

Factors influencing marketing efficiency

Table 3 revealed that the significant determinants of sugarcane marketing efficiency in the study area were household size, marketing experience, off-farm income, and access to credit. All these variables were statistically significant at 5% level of significance.

Table 3: Parameter estimate of the Factor influencing of marketing efficiency

Marketing efficiency	Coefficient	Std.Err	z	Prob> z
Age	-0.0047486	.0031295	-1.52	0.134
Household size	-0.8606698	.4085566	-2.11	0.035**
Gender	-0.0825345	.1212746	-0.68	0.498
Marital status	-0.092878	.1458313	-0.64	0.526
Years of education	0.0072506	.0049276	1.47	0.146
Marketing experience	0.285257	.1215132	2.35	0.022**
Off-farm Income	0.0784444	.0382322	2.05	0.044**
Credit access	0.4646466	.2109785	2.20	0.028**
Constant	1.171218	.2524786	4.64	0.000

Diagnostics

R-squared = 0.6339

F(10, 119) = 1.79

Prob> F = 0.0610

Source: Field Survey

Household size was negative and significant this implied that an increase in the size of the household will decrease the marketing efficiency in the study area. The coefficient of marketing experience had a positive value and significant at 5% level. This indicates that an increase in the marketing experience of the respondent will lead to an increase in the marketing efficiency. So also, income and access to credit had positive value and they are significant at 5% level indicating a rise in the access to credit or income of the respondents will increase the marketing efficiency in the study area.

R squared is 0.6339, which means that 63.39 percent variation in marketing efficiency is explained by the explanatory variables such as age, household size, gender, marital status, years of education, marketing experience, off-farm income and credit access.

Constraints facing the respondents in the study area

Table 4: Constraints faced by the respondents in the study area

Index	4	3	2	1		Index score	Rank
Variables/Statement	Very serious	Moderately serious	Mild	Not serious at all			
High cost of transport	14 (11.67)	35 (29.17)	51 (42.50)	20 (16.67)		0.46	5
Inadequate access to the market	19 (15.83)	62 (51.67)	25 (20.83)	13 (10.83)		0.57	4
Inadequate storage facilities	27 (22.50)	62 (51.67)	21 (17.50)	9 (7.50)		0.63	3
Perishability of Produce	32 (26.67)	71 (59.17)	16 (13.33)	1 (0.83)		0.71	2
Low Patronage	0 (0.00)	4 (3.33)	81 (67.50)	35 (29.17)		0.23	7
Inadequate Supply of sugarcane	1 (0.83)	12 (10.00)	79 (65.83)	28 (23.33)		0.29	6
Inadequate Credit Facilities	85 (70.83)	30 (25.00)	4(3.33)	1 (0.83)		0.886	1

Source: Field Survey NB: (Percentage in parenthesis)

The most daunting constraint to sugarcane marketing in the study area is inadequate access to credit facilities. This was closely followed by perishability of sugarcane produce. The third constraint in order of severity is inadequate storage facilities.

CONCLUSION AND RECOMMENDATIONS

The results revealed that modal age was 46 years. Sugarcane marketing is a male dominated enterprise and majority of the respondents have at least secondary school education. The mean household size was 6 members. The marketing margin and efficiency analysis showed that the sugarcane marketers on average handled 4943.604kg/year of product and the average price that this product was sold per kg was estimated at ₦80.21. This amounts to a total revenue of ₦396,540.18 per year. Variable cost which includes loading, off-loading, stock purchased, rent, transport cost and miscellaneous amounted to ₦112,281.98 per year. This gives a marketing margin of ₦284,258.2/year. The marketing efficiency was also calculated as 71.68%.

The OLS result showed that factors influencing market efficiency in the study area are household size, marketing experience, off-farm income, and access to credit. This was in line

with the a-priori expectation for the study. R^2 was 0.63 which indicates that the model specify could explain up to 63% of variation in the dependent variable included in the model. Inadequate credit facility was the major constraint reported by the respondent to sugarcane marketing. The following are therefore recommended:

1. This study recommends that credit facilities be made available to the marketers. The more capital they have access to, the more they can increase their scale of operation.
2. Provision of storage and processing facilities that will allow marketers to make more profit along the sugarcane value chain should be made available. More so, they will not be under pressure to sell at ridiculous prices for the fear of post-harvest loss.

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