Original Contribution

ANALYSIS OF COCOYAM MARKETING IN SAGAMU LOCAL GOVERNMENT AREA, OGUN STATE, NIGERIA

A. E. A. Fadipe, A. H. Adenuga*, U. A. Raji

Department of Agricultural Economics and Farm Management, University of Ilorin, Ilorin, Nigeria

ABSTRACT

The study examined the analysis of cocoyam marketing in Sagamu Local Government area in Ogun state, Nigeria. The study analysed the cocoyam market in the study area. Specifically, the study estimated the marketing margin, marketing efficiency and also examined the constraints to cocoyam marketing. The study made use of primary data obtained from 120 cocoyam traders through a well structured questionnaire. Descriptive statistics, Marketing margin analysis, Shepherd's marketing efficiency index and the Gini coefficient were the major analytical tools employed for the study. The results of the study showed that cocoyam marketing in the study area is competitive and that there is a relatively high level of inequality among the traders. Lack of credit facilities, inadequate capital and poor infrastructural facilities where identified as the major factors militating against cocoyam marketing in the study area. The study therefore recommended that the government as well as non governmental agencies should empower the marketers through the provision of micro credit facilities to encourage more people to go into cocoyam marketing.

Key words: Cocoyam; Marketing efficiency; Marketing margin; Gini coefficient; Sagamu and Traders

INTRODUCTION

In Nigeria, cocoyam (colocasia and xanthosoma spp) is ranked after cassava and yam as one of the most important staple food crop among the roots and tubers cultivated and consumed in the country (1-3). With about 40% of the total world production, Nigeria is the largest producer of the crop in the world (4, 5). Cocoyam production in Nigeria rose from about 0.73millions metric tons in 1990 to as much as 5.068 million metric tons in 2007 (6). On the average, Nigeria currently produces about 3.7 million metric tonnes of cocoyam annually (7). Cocoyam is not only a major source of food but also an important source of income for the rural farming households (8). The crop is cultivated mostly by peasant farmers who operate within subsistence economy (1, 9). The crop is available all year round, given its resistance to drought, pests and diseases, and also has tolerance for a variety of climatic and soil condition on the farm (8). Nutritionally, it is superior to cassava and yam with the composition of 70-80% water, 20-25%

starch and 15-30% protein and also has a significant amount of vitamins and it is usually prescribed for diabetic patients (4, 9). It can be consumed various forms; boiled, fried, pounded or roasted, porridge and as biscuit (9). It can be processed into a chip which has long shelf life thereby providing food all year round (9).

In spite of its economic and nutritional significance, the marketing system for cocoyam in the country is not well developed. Compared to cocoyam production, cocoyam marketing has received much less than sufficient attention by researchers and policy makers. The agricultural marketing system plays a major role in economic development in countries whose resources are primarily agricultural. As the process of urbanization progresses in Nigeria, an increasing share of marketing activities takes place at locations other than where food is produced. According to (10). Although markets are essential in the process of agricultural commercialization, as many people argued, transaction costs and other causes of market imperfections could limit the participation of households in different markets. Efficient agricultural marketing systems helps to locate where there are surpluses and bring them to

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Correspondence to: A. H. Adenuga, Department of Agricultural Economics and Farm Management, University of Ilorin, Ilorin, Nigeria, adenugahenry@gmail.com

where there are shortages (11). Efficient marketing of cocoyam would contribute to an increased marketable surplus by scaling down the losses arising out of inefficient processing, storage and transportation and consequently leads to increased farm income. It is essential that food products are able to move from the producers to the consumers at the lowest cost consistent with the provision of the services that consumers' desire and are able to pay for (12). This can only be achieved with an efficient marketing system. Adequate structured markets and marketing of cocoyam will enhance the activities of the producers and the marketers which will invariably improve the market structure. In view of the foregoing; this study was carried out to evaluate the marketing margin and marketing efficiency of cocoyam farmers in the study area. It also analysed the constraints faced by the traders in the marking of the crop.

METHODOLOGY
Area of study
This study was conducted in Sagamu Local Government Area of Ogun State, Nigeria. The state is bordered to the East by Ondo State and to the North by Oyo State and Osun State. It has a border with Republic of Benin in the west and with Lagos state in the South. The State has a land area of 16,409.26 sq. kilometers and total population of 3,751,140 residents (13). The state with two ecological zones is well suited for food crop production like Oil palm, Rice, Kola-nut, Cocoa, Cotton, Cassava, Cocoyam and Vegetables.

Sampling Techniques
A combination of purposive and random sampling technique was employed in selecting respondents for the study. The first stage was the purposive selection of 4 major cocoyam markets in the study area. The markets are Falowo, Awolowo, oja-Oba and sabo markets. This was then followed by the random selection of 17 retailers and 13 wholesalers from each of the markets. On the overall, a total of 120 respondents were selected and interviewed for the study using a well structured questionnaire.

Analytical Techniques
Descriptive statistics such as, frequency distribution, percentages, averages and ranking techniques were used to analyze the socio economics characteristics of the respondents and the constraints to cocoyam marketing in the study area. Gross marketing margin analysis and the shepherd's index were use to analyse the

gross marketing margin and the marketing efficiency respectively for the different marketing channels. The gini coefficient was used to measure the degree of seller concentration of the traders in the study area.

Marketing Margin Analysis
The gross marketing margin for the wholesalers and retailers of cocoyam were estimated separately using the formula given below.
$$GM = SP - CP \dots \dots \dots \dots \dots \dots (1)$$
Where:
GM = Gross marketing margin
SP = Selling price per bag of cocoyam
CP = Cost Price of per bag of cocoyam
Net marketing margin was estimated using following formula.
$$NM = GM - MC \dots \dots \dots \dots \dots (2)$$
NM = Net marketing margin
GM = Gross marketing margin
MC = Total marketing cost
1 bag of cocoyam is equivalent to 50Kg

Marketing Efficiency Analysis
To estimate the marketing efficiency for the wholesalers and retailers, the Shepherd's index formula developed by (14) was employed. The formula is given by:
$$ME = \frac{GM}{MC} - 1 \dots \dots \dots \dots \dots \dots (3)$$
Where:
ME = Marketing Efficiency index
GM = Gross marketing margin in Naira/50Kg of cocoyam
MC = Total marketing cost in Naira/50Kg of cocoyam
The higher the ratio, implies the higher the marketing efficiency and vice versa.

Market Structure
To measure the degree of the degree of seller concentration of the traders the gini-coefficient was used through the use of total value of monthly sales as an index measurement of the market share. The Gini coefficient (G) was computed as follows
$$G = 1 - \sum_{i}^{k} X_i Y_i \dots \dots \dots \dots \dots (4)$$
Where X_i = percentage of sellers in the ith class of traders,
Y_i = cumulative percentage of sellers in the ith class traders,
K = number of classes.

The Gini coefficient ranges from 0 to 1, where 0 implies perfect equality in the distribution (perfect market) and 1 implies perfect inequality (imperfect market). The closer the Gini

coefficient is to zero, the greater the degree of equality and the lower the level of concentration and the more competitive are the markets.

Exchangeability of the Nigeria Naira into US$ 1 US$ = N182.75 (2014 exchange rate).

Table 1. *Socioeconomics Characteristics of the Marketers*

Variables	Wholesalers		Retailers	
	Frequency	Percentage	Frequency	Percentage
Gender				
Male	12	23.1	9	13.2
Female	40	76.9	59	86.8
Total	**52**	**100**	**68**	**100**
Marital Status				
Single	2	3.8	6	8.8
Married	38	73.1	45	66.2
Divorced/Separated	10	19.3	15	22.1
Widow	2	3.8	2	2.9
Total	**52**	**100**	**68**	**100**
Age (Years)				
≤ 25	1	1.9	2	2.9
26-30	5	9.6	5	7.4
31-35	7	13.5	9	13.2
36-40	6	11.5	16	23.5
41-45	18	34.6	21	30.9
>45	15	28.8	15	22.1
Total	**52**	**100**	**68**	**100**
Educational Level				
No Formal Education	22	42.2	36	52.9
Primary	12	23.1	15	22.1
Secondary	17	32.7	15	22.1
Tertiary	1	1.9	2	2.9
Total	**52**	**100**	**68**	**100**
Household Size				
≤ 3	1	1.9	6	8.8
4-5	24	46.2	28	41.2
6-7	23	44.2	27	39.7
≥ 8	4	7.7	7	10.3
Total	**52**	**100**	**68**	**100**
Source of Capital				
Friends and Relatives	6	11.5	10	14.7
Money Lender	11	21.2	13	19.1
Cooperatives	9	17.3	17	25.0
Personal Savings	26	50.0	28	41.2
Total	**52**	**100**	**68**	**100**
Marketing Experience				
≤ 2	1	1.9	1	1.5
3-7	11	21.2	21	30.9
8-12	28	53.8	41	60.3
13-17	5	9.8	3	4.4
>17	7	13.5	2	2.9
Total	**52**	**100**	**68**	**100**

Source: Field Survey, 2014

RESULTS AND DISCUSSION
Socio-economic characteristics
The socio-economic profile of the traders is presented in **Table 1**. The result showed that about 77% and 87% respectively of the cocoyam wholesalers and retailers were females. Majority of the respondents were also married (73.1% and 66.2% for both wholesaler and retailer respectively). The modal age for both the wholesalers and retailers was 41 – 45years why their average age were 45 and 46 years respectively. The modal household size for both groups was also 4-5 members. As much as 42.20% of the wholesalers and 52.90% of the retailers had no form of formal education. This

indicates a high level of illiteracy among the traders. The main source of income for the traders was personal savings (50% and 42% respectively for the wholesalers and retailers. More than 65% of both the wholesalers and retailers have more than 8 years experience in cocoyam trade.

Marketing Margin and Marketing Efficiency
The marketing of cocoyam in the study area is characterized by two major channels.

I.   Farmer------- Wholesaler------- Retailer------ -Final consumer

II.   Farmer--------Retailer------------Final consumer

The result of the marketing margin and marketing efficiency analysis is given in **Table 2**. The result revealed that the gross marketing margin and net marketing margin for channel I were ₦602 and ₦267.22 respectively with a marketing efficiency of 0.8 while for channel II, the gross marketing margin and net marketing margin were ₦955.88 and ₦644.49 respectively with a marketing efficiency of 2.29

Table 2. *Marketing Margin and Marketing Efficiency of the Marketers*

Parameters (₦)	I	II
Purchase price of cocoyam	**3385.5**	**3470.59**
Marketing cost		
Transport cost	221.73	128.75
Storage cost	13.52	19.93
Labour cost	90.10	129.45
Sanitation fee	9.35	13.26
Total marketing cost	**334.70**	**291.39**
Total cost	3720.28	3761.98
Selling price	3987.50	4426.47
Gross marketing margin	**602**	**955.88**
Net marketing margin	**267.3**	**644.49**
Marketing efficiency	**0.80**	**2.29**

Source: Data Analysis, 2014

Market Structure Analysis
The result of the cocoyam market structure analysis for wholesalers and retailers is presented in **Table 3 and 4** respectively. The results of the Gini coefficient of 0.43 and 0.51 for the wholesalers and retailers respectively showed that cocoyam trade among in the study area is a competitive venture such that the action of a single participant does not affect the price of the crop.

Table 3. *Result of Gini Coefficient Analysis for the wholesalers*

Weekly sales(₦)	Frequency	% of wholesaler (X_1)	Total value of weekly sales	% value of weekly sales	Cumulative % of total weekly sales (Y_1)	$\sum X_1 Y_1$
1 – 50000	13	25.0	419400	10.6	10.6	0.0265
50001 – 100000	28	54.0	2067000	52.0	62.6	0.3380
100001 – 150000	10	19.2	1324800	33.3	95.9	0.1835
>150000	1	1.9	163500	4.1	100	0.0190
Total	52	100	3974700	100		0.5670
Gini coefficient	**0.433**					

Source: Data Analysis, 2014

Table 4. *Result of Gini Coefficient Analysis for the Retailers*

Weekly sale(₦)	Freq	% of retailers (X_1)	Total value of weekly sales	% value of weekly sales	Cumulative % of total weekly sales (Y_1)	$\sum X_1 Y_1$
1 – 50000	31	45.5	946000	22.0	22.0	0.1001
50001 – 100000	25	36.8	1757200	40.8	62.8	0.2312
100001 – 150000	10	14.7	1206000	28.0	90.9	0.1335
150001 – 200000	1	1.5	177000	4.1	94.9	0.0142
>200000	1	1.5	216000	5.0	100	0.0150
Total	68	100	4302200	100		0.4940
Gini coefficient	**0.506**					

CONSTRAINTS TO COCOYAM MARKETING

As shown in **Table 5**, the major problems encountered by the marketers for both wholesalers and retailers are; inadequate capital with the value 90.4% for wholesalers and 98.5% for retailers, lack of credit with the value 88.5% for wholesalers and 92.6% for retailers, lack of storage facilities, 57.7% for wholesalers and 73.5% for retailers, high transportation cost with the value 57.7% for wholesalers and 60.3% for retailers, long distance to the market with the value 88.5% for wholesalers and 89.7% for retailers and bad road with the value 94.2% for wholesalers and 94.1% for retailer

Table 5. *Problems Encountered by the Marketers*

	Wholesalers		Retailers	
Variable	Frequency	Percentage	Frequency	Percentage
Inadequate capital	47	90.4	67	98.5
Lack of credit	46	88.5	63	92.6
Storage problem	30	57.7	50	73.5
High transportation	30	57.7	41	60.3
Seasonality	20	58.5	27	39.7
Long distance to market	46	88.5	61	89.7
Bad road	49	94.2	64	94.1

Source: Field survey, 2014

CONCLUSION AND RECOMMENDATIONS

The research into the marketing of cocoyam in the study area showed, that the cocoyam market in the area is competitive with a relatively high level of inequality among the traders.. The study was also able to show that considerable numbers of factors militate against an efficient marketing system of the crop. Based on the findings of this study, it is recommended that government as well as non governmental agencies should empower the marketers through the provision of micro credit facilities to encourage more people to go into cocoyam marketing. Also, government should provide an enabling environment through the provision of needed infrastructural facilities especially good roads.

REFERENCES

1. Knipscheer, A. and Wilson, U., Importance Of Cocoyam Production in Nigeria. Proceedings of The National Workshop on Cocoyam, Umudike Nigeria 2000.
2. Echebiri, R.N., Socio-economic Factors and Resource Allocation in Cocoyam Production in Abia State, Nigeria.*Journal of Sustainable Tropical Agricultural Research* 9: 9 – 73 2004.
3. Okoye, B. C., Asumugha, G. N. Okezie, C. A., Tanko, L. and Onyenweaku, C. E., Econometric Assessment of the Trend in Cocoyam Production in Nigeria, 1960/1961 – 2003/2006. *Agricultural Journal* 3 (2): 99-101, 2008

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4. Onwueme, I. C., The Tropical Tuber Crops: Yams, Cassava, Sweet Potato and Cocoyams. John Wiley and Sons, Chichestar. pp. 215-225, 1978.
5. Eze C.C. and Okorji E.C., Cocoyam production by women farmers under improved and local technologies in Imo State, *Nigeria. African Journal of Science*, **5**(1), 113-116, 2003.
6. Food and Agriculture Organization(FAO), FAOSTAT. Retrieved from http://faostat.fao.org/site/567/default.aspx#ancor
7. Baruwa O. I. and Oke J. T. O., Analysis of Technical Efficiency of Smallholder Cocoyam Farms in Ondo State, Nigeria. *Tropicultural* 30(1) 36-40, 2012.
8. Ogunniyi, L. T., Profit Efficiency among Cocoyam Producers in Osun State, Nigeria. *International Journal of Agricultural Economics and Rural Development* 1(1): 38-46. 2008.
9. Enyinanya, A.M., Field production of cocoyam *In NRCRI* Training *Manual for Root Crops Research and Technology Transfer Training Courses*, NRCRI, Umudike, pp: 114–126, 1992.
10. Keh, H.T., S. Chu and J. Vu., Efficiency Effectiveness and Productivity, European Journal of Operational Research, 170: 256 – 276, 2006.
11. Adegeye, A.J and Ditto J.S., Essential of Agricultural Economics. Impact Publishers, Nigeria Limited, Ibadan, 285pp 1985.
12. Abbott J.C and Makeham J.P., *Agricultural Economics and Marketing in the tropics* 2nd Edition. Longman U.K. Ltd, 1990.
13. Ogun State Central Department of Statistics CDS., Ogun State Statistics. Ogun State Central Department of Statistics, Abeokuta, Nigeria. pp.2, 2008.
14. Shepherd, G.S., Farm Products-Economic Analysis. Iowa State University Press, Iowa, USA. 254.1965