

PERFORMANCE OF YAM WHOLESALERS MARKETING IN EFON-ALAAYE OF EKITI STATE, NIGERIA

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ABSTRACT

This paper appraised the performance of yam wholesalers marketing in Efon Alaaye Local Government Area of Ekiti State Nigeria. The study employed the use of primary data collected with structured questionnaire administered to the yam wholesalers in the market. The study used ordinary least square regression analysis (OLS) to determine the relationship and variability of each of the unit marketing margins and unit marketing costs to quantity of yam marketed per annum. The results revealed that the total output of yam marketed in the industry was about 1.4 million kilogram per annum, while the maximum and minimum quantity marketed were 75,278.88kg and 38, 9305.kg respectively. Wholesalers not marketing up to the recommended cost minimizing volume of 53,730kg should increase their business volume to at least that level so as to reduce the unit marketing costs, increasing unit marketing margin and thus the profit margin and finally the total returns to management.

***Keywords:** Yam, wholesaler, Local Optimum performance and Global optimum performance.*

INTRODUCTION

Yam is a traditional staple food for millions of people in the tropical countries of the world. Nigeria alone is responsible for nearly half the world's production. Record has it that in 1958/59, Nigeria produced an estimated quantity of 8.2 million tonnes of yams valued at 180.1million pounds (N360.2million) (Federal Department of statistics, Agricultural Survey reports Lagos, 1960). In 1972, nearly 10 million tonnes of yam was estimated as being produced in Nigeria and the amount continued to increase and most of this quantity produced was consumed locally (Onwueme, 1972). As recorded by FAO and reported by IITA (2006), Nigeria produced 26 million tonnes of yam as at year 2000. The same IITA (2007) reported that Nigeria is the world leading producer with 34 million tonnes.

Yam tubers are the consumable products of yam crop, and the tubers are sources of carbohydrate. The tubers can be prepared for consumption by boiling and eating with stew, roasted and eating with stew, boiling and pounding and eaten

with stew, as pottage, yam balls, peeled, sliced and fried into yam chips Opeke (2006).

Preliminary investigations of the market in the study area presupposed that the quantity of yam handled per annum is not a significant explanatory variable of unit market costs but that it is a significant explanatory variable of the unit marketing margins; that the market is not perfectly competitive, that the number of wholesalers in the market are not enough and that there are no economies of size in the industry. The preliminary observations and issues raised in the forgone all needing answers combine to strongly suggest the need to conduct this study in Efon Alaaye Local Government based yam wholesale market.

METHODOLOGY

This research work was carried out in Efon Alaaye Local Government Area of Ekiti State, Nigeria. The Local Government was created in 1996. The territorial area of Efon-Alaaye Local Government extends to about 30 Kilometre in breath and 55 kilometres in length and its land area is almost two thirds of the entire land of old Ekiti West Local Government from where it was carved out in 1996. (Efon Alaaye Local Government a case for, 1992), Efon Local Government is a major distribution centre for agricultural commodities; prominent amongst which are yam, rice, maize, cassava, oil palm and vegetables. It is a potential producer and supplier of economic trees as it is currently housing about 500,000 units capacity of Teak (*Tectona grandis*) and (*Gmelina arborea*) trees planted in the Local Government domain within the last six years (Folayan 2007).

This study made used of primary data. The primary data were collected with the use of structured questionnaire and administered to forty six yam wholesalers in the market. Ordinary Least Square (OLS) Regression analysis was employed to determine Variability of Unit Marketing Margin (UMM) and Unit Marketing Costs (UMC) with the quantity (Q) of yam marketed per annum. The values of the dependent variables viz: UMC and UMM were multiplied by one million before feeding them to the computer. The need for this is to guide against the regression coefficients in the OLS regression equations being recorded as zero, since the computer programme used, gives the regression coefficient to only five decimal places. This method conforms with Akinboro (1981) and Utomakili (1981). Marginal Marketing Cost (MMC) function was derived from the relationship between UMC and Q. Also marketing Cost-quantity curves were drawn for the industry. Determination of relevant parameters Quantity of yam marketed by each firm per annum was determined, cost tracing variables were identified, while the annual cost, total costs and absolute marketing margins were calculated. The operational efficiencies, with respect to local optimum and Global Optimum performances were calculated using long-run unit cost minimization.

RESULTS AND DISCUSSION

Only 35 respondents about 83% of the questionnaire were found to have been consistently marketed significant quantity of yam in the market for a minimum of ten years. The outcome of Ordinary Least Square (OLS) regression analysis showing the relationship between unit marketing margin and quantity of yam marketed and the unit marketing cost and quantity of yam marketed are shown in equations 1 and 2 respectively.

1.
$$Umm = 10^{-6} (1146943.36588 + 32.349560) \text{ ₦}$$

$$(367021.88)(10^{-6}) (10.351859)(10^{-6})$$

$$R^2 = 0.03040 \quad R^{-2} = 0.00102$$

$$F = 1.03464 \quad MSR = 6828547125225.126$$
2.
$$UMC = 10^{-6} (597042.25401) - (3.8558Q)$$

$$(192018.75)(10^{-6}) (1.24009) (10^{-6})$$

$$R^2 = 0.022659 \quad R^{-2} = 0.203112$$

$$F = 9.66658 \quad MSR = 10382148274.58063$$

Equation 1 shows that the quantity of yam handled per annum is not a significant explanatory variable of unit marketing margin. This implies that there are other factors that determine the value of the UMM obtained by the firms in the industry. It also suggests the prevalence of a conduct aspect of perfect competition, that price, for which marketing margin could be a proxy in this work, is not on the average affected by the amount purchased per unit time.

Equation 2 shows that quantity of yam handled per annum is a statistical significant explanatory variable of unit marketing cost at 5% level of significance. It shows that as the quantity of yam marketed increases the unit marketing cost decreases *ceteris paribus*. The equation indicates that for every 1kg increase in the quantity of yam marketed per annum, unit marketing cost decreases by N0.000004 (that is, N3.85 x 10⁻⁶). The equation explains about 20% of the adjusted variability in the variability of unit marketing cost. The implication of this result is that firms in the industry should endeavor to increase the quantity of yam marketed per annum so as to reduce the marketing cost.

The stepwise structural equations of the relationships between unit marketing costs and quantity of yam marketed which is statistically significant in the linear form are shown in step 1, 2 and 3 below.

Step 1

$$Umc = 10^{-6} (597042.25401) - (3.855584) \text{ ₦}$$

$$(192016.7800) (10^{-6}) (31.80339) (10^{-6})$$

$$(1.24009) (10^{-6})$$

$$R^2 = 0.22659 \quad R^{-2} = 0.20312$$

$$F = 9.6658 \quad MSR = 10382148274.58063$$

Step 2

$$\begin{aligned} \text{Umc} &= 10^{-6}(923709.44626 - 20.41735Q + 0.00019Q^2) \text{ N}(230972.9700)(10^{-6}) \\ &\quad (5.10535)(10^{-6}) (0.00006)(10^{-6}) \\ R^2 &= 0.42472 \quad R^{-2} = 0.38876 \\ F &= 11.81239 \text{ MSR} = 7963550641.92578 \end{aligned}$$

Step 3

$$\begin{aligned} \text{Umc} &= 10^{-6}(1423091.43512 - 61.64910Q + 0.00119Q^2 - 0.00000Q^3) \\ &\quad \text{N}(707915.9600)(10^{-6}) (30.67313)10^{-6} (0.00074)(0.0000)10^{-6} \\ R^2 &= 0.45723 \quad R^{-2} = 0.40471 \\ F &= 8.70486 \text{ MSR} = 7755825394.43689 \end{aligned}$$

R^2 based on the criteria of highest adjusted. (R^{-2}) and least Mean Square Residual (MSRes) which indicate the best of fit to the observed data, equation 2 step 2 was chosen as the lead equation. The equation is reproduced in equation 4.

Equation 4

$$\begin{aligned} \text{Umc} &= 10^{-6}(923709.4462 - 20.41735Q + 0.00019Q^2) \text{ ₦} \\ &\quad (230972.9700)(10^{-6}) (5.105335)(10^{-6}) (0.00006)(10^{-6}) \\ R^2 &= 0.42472 \quad R^{-2} = 0.38876 \\ F &= 11.81239 \text{ MSR} = 7963550641.92578 \end{aligned}$$

In equation 2, the average basic unit marketing cost is N0.92 (i.e. ₦923709.45 \times 10⁻⁶) per firm in the industry. The marginal marketing cost (MMC) function derived from the equation is in equation 5 below.

Equation 5:

$$\text{MMC} = \frac{d(\text{UMC} \times Q)}{dQ} = 10^{-6}(923668.61 - 0.001Q^2)$$

The OLS derived marketing cost curves obtained from equation 2 step 2 and equation 5 in the industry are shown in figures 1 and 2. Marketing cost - volume scatter - gram for all firms in the industry and the associated free hand drawn "minimum" and "industry average" unit marketing cost curves. Fig. 1 and the free hand drawn unit marketing cost curves in fig. 2 indicate that economies of size exist in the Efon Alaaye Local Government Area based yam wholesale industry in 2008. Therefore, firms in the industry should endeavour to increase the quantity of yam handled per annum so as to reduce the marketing cost.

Fig. 2 illustrates that if the "averagely efficient" industry curve is considered, there are economies of size up to about 40,500kg of yam, beyond which level size diseconomies set in. For the "minimum" unit cost i.e. the curve relating to the most locally efficient firms, economies of size area enjoyed up to a marketed volume of 44,492kg beyond which size diseconomies set in.

The recommended minimum volume of sale determined from the unit marketing costs curve of figure 1 is 53,730kg. This is the minimum volume of sales that the "average" firm in the industry should handle per year in order to minimize its unit marketing charges. In recommending the profit maximizing level of sales,

the cost functions estimated above and the demand function for the industry were used. The demand function is represented by the horizontal line of unit marketing margin (UMM) which equal to ₦12.7 (Arithmetic mean of UMM). This method conforms with Utomakili (1981).

In a perfectly competitive market situation, the output level that will maximize total profits of firms will be that which corresponds to the point where price (P) = Marginal Revenue (MR)= Marginal Cost (MC). In a perfectly competitive market, the price line is the equation of the demand curve facing a firm. The above stated condition is equivalent for this study to UMM = Marginal Marketing Revenue (MMR) = UMC. The profit maximizing output at the UMM = ₦12.7 is 397.292kg of yam per annum. In the long run situation where no abnormal profit is being made a situation of normal profit, UMM = ₦0.3 per kg, the total profit maximizing volume of output will be 53,730kg per firm per annum. The amount (0.38/kg) does not include return to management.

Recommended Maximum Number of wholesalers for the Volume handled by The 35 Firms

Since about 1,348,302.29kg of yam was handled by the 35 studied wholesalers in 2008, and the recommended volume of trade per firm per annum was 53,730kg, the maximum number of firms recommended for the volume of trade handled by the wholesalers was calculated thus:

$$\text{That is: } \frac{1348302.29}{53,730} = 25.09 = 25 \text{ firms}$$

Hence, the number of firms that should handle the analysed volume with the intention of unit cost minimization should not be beyond 25. This implies that the number of firms that did handle the analysed volume in 2008 was many. This however does not mean that wholesalers necessarily have to quit the industry. What appears to be required is for each of the firms to increase its volume up to the recommended 53,730kg per annum. This recommendation is important in the light of the fact that the wholesalers indicated that they have only been able to meet about 50 - 60 percent of their demand. Meaning that to meet their demand, at least 2,247,170.48kg (989,942.94 tubers) of yam will have to be marketed per annum by the 35 firms. This comes to an average of 64,204.9kg (28,284.1 tubers) per annum which is about 1.2 times the minimum volume of sales recommended.

Assuming each firm handles the minimum recommended volume, this will be equal to 1,880,550kg (that is 35 x 53730kg) (828436.12 tubers) at 2.27g per tuber of yam per annum in the industry. This is equivalent to $(53,730 \div 64204.9 \times 100)$ 83.7% of the volume needed to meet the market demand. In the industry, (32 firms) 91.43% of the firms handled less than the recommended volume of sales while (3 firms) 8.57% of the firms handled more than the recommended volume. The difference between the recommended volume of sales per annum (53,730kg) and the minimum, maximum, mean, median and mode volumes in the industry were respectively + 34264.75kg; - 21548.88kg; + 15207.1; 14799.5; + 14799.5kg.

Distribution of Unit Marketing Costs (UMC) and Unit Marketing Margins (UMM): In Efon Alaaye Local Government based yam wholesale industry, the range of UMC was N2.37/kg to N6.92/kg while UMM ranged from 8.23/kg to 18.50/kg. Also the standard deviation for the UMC was 1.14 per kilogram and standard deviation for the UMM was 2.58 per kilogram. As are summarized on table 1 below. The estimates indicate that for any statistic, the UMM was higher than the UMC.

Table 1: Distribution of Unit Marketing Costs and Unit Marketing Margin in Efon Alaaye Local Government based yam wholesale industry 2008

Statistics	Unit Marketing Charges kobo per kg.	Unit Marketing Margin kobo per kg
Mean	₦4.47	₦12.67
Mode	₦4.01	₦14.21
Median	₦4.09	₦13.00
Standard deviation	₦1.14	₦2.58
Maximum	₦6.92	₦18.50
Minimum	₦2.57	₦8.23

Source: Estimation done for this study in 2008

Table 2: Unit Marketing Cost and Operational Efficiency of Yam Wholesale Marketing Firms in Efon-Alaaye Local Government Area, 2008

Firms	Qty Handled per year in kg	Unit Marketing Cost per kg	Operational Efficiency
1.	22700	5.48	46.9%
2.	33039.85	4.62	50.6%
3.	43379.9	7.62	98.1%
4.	40757.85	3.86	66.6%
5.	38136	4.13	62.2%
6.	28800.63	4.96	51.8%
7.	19465.25	6.92	37.1%
8.	44492	2.57	100%
9.	32177.25	4.23	54.3%
10.	19862.5	6.70	38.4%
11.	20702.4	6.45	39.8%
12.	23154	5.69	45.2%
13.	25605.6	5.84	44.0%
14.	49940	3.82	67.3%
15.	43243.5	3.87	66.4%
16.	36547	4.26	60.3%
17.	38930.5	4.09	62.8%
18.	39327.75	4.01	64.1%
19.	39725	4.01	64.1%
20.	75278.87	3.91	65.7%
21.	72640	3.00	65.9%
22.	34050	4.47	57.5%
23.	69348.5	3.88	66.2%
24.	49134.15	3.74	68.7%
25.	28919.8	5.00	51.4%
26.	21928.2	6.26	41.1%
27.	20499.81	6.62	38.8%

28.	38930.5	4.06	63.7%
29.	43981.25	3.87	66.4%
30.	49032	3.50	73.4%
31.	29510	4.93	52.1%
32.	37228	4.25	60.5%
33.	44946	2.74	93.8%
34.	45944.8	3.35	76.7%
35.	46943.6	3.45	74.5%

Source: Estimation done for this study in 2008

Performance By Efficiency: The unit marketing costs by firms and its transformation into relative efficiency is contained on table 2.

Local Optimum Performance: At the local level, the firm that incurred a unit marketing cost of ₦4.06/kg is more efficient relative to another firm handling the same volume of 38,930.5kg per annum but which incurred a unit marketing cost of ₦4.09/kg.

Global Optimum Performance: At the global level, the most efficient firm is the one that has the least unit marketing cost of ₦2.57/kg with the total volume of 44,492kg handled per annum.

CONCLUSION AND RECOMMENDATIONS

The research focused mainly on the wholesalers of yam because of the important roles that have been identified by previous studies as played by this institution in the distribution of food crops from producers to consumers. The research process consisted of drawing the initial questionnaire, pre-testing them, making adjustment on them on the basis of pre-testing, administering the questionnaire, analyzing them and synthesizing thereafter various cost and efficiency function and curves. During the survey, thirty five wholesalers about 83% of the whole were interviewed in the market site.

The total output handled in the industry was about 1.4 million kilogram of yam equivalent of 102362 tubers of various sizes. The maximum quantity handled was 75278.88kg; minimum quantity handled was 19,465.25kg mode quantity handled was 38,930.5kg; and the median quantity handled was 38,930.5kg. The arithmetic mean marketing costs and margins estimated for the whole industry were ₦4.47/kg and ₦12.67/kg of yam respectively. Also, some regression analysis using ordinary least squares (OLS) estimate methods were done to determine how some variables varied with others.

The results of the regression analysis carried out showed that the quantity of yam handled is statistically significant explanatory variable of unit marketing charges. There are economies of size in the industry. The unit cost minimizing volume of operation was 53,730kg. This volume was therefore recommended as the minimum volume that firms in the industry should handled.

With the aid of the recommended minimum volume of operation, the estimated number of firms that should handle the industry's total volume of output

was calculated to be 25 firms. This would appear on first impression that the 35 firms that handled the estimated output of the industry were too many. This is not necessarily so. It does not necessarily mean that wholesalers have to quit the industry. What appears to be required is for the firms that are handling less than the recommended minimum volume of 53,730kg per annum to increase their volume at least to that level? This has to be so since the seller expressed their inability to meet the demand quantity of their purchasers. They thought they would still have a market by increasing their present volume.

Analysis of the regression equation showed that the quantity of yam handled per annum is not a statistically significant explanatory variable of unit marketing margin. This suggest that the pricing condition of perfect competition holds in the yam wholesale industry, assuming that the price paid for yam by the wholesalers at the penultimate exchange point also exhibited independence of quantity purchased per unit of time. The wholesalers that are not at present handling up to the recommended cost minimizing volume (53,730kg per annum) should increase their business volume to at least that level. This will go a long way reducing the unit marketing costs, increasing unit marketing margin and thus the profit margin and finally the total returns to management in yam wholesale industry in the study area.

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FIG 1: CURVE OF THE EFFECTS OF THE GOVERNMENT POLICY ON THE ECONOMIC GROWTH OF THE COUNTRY

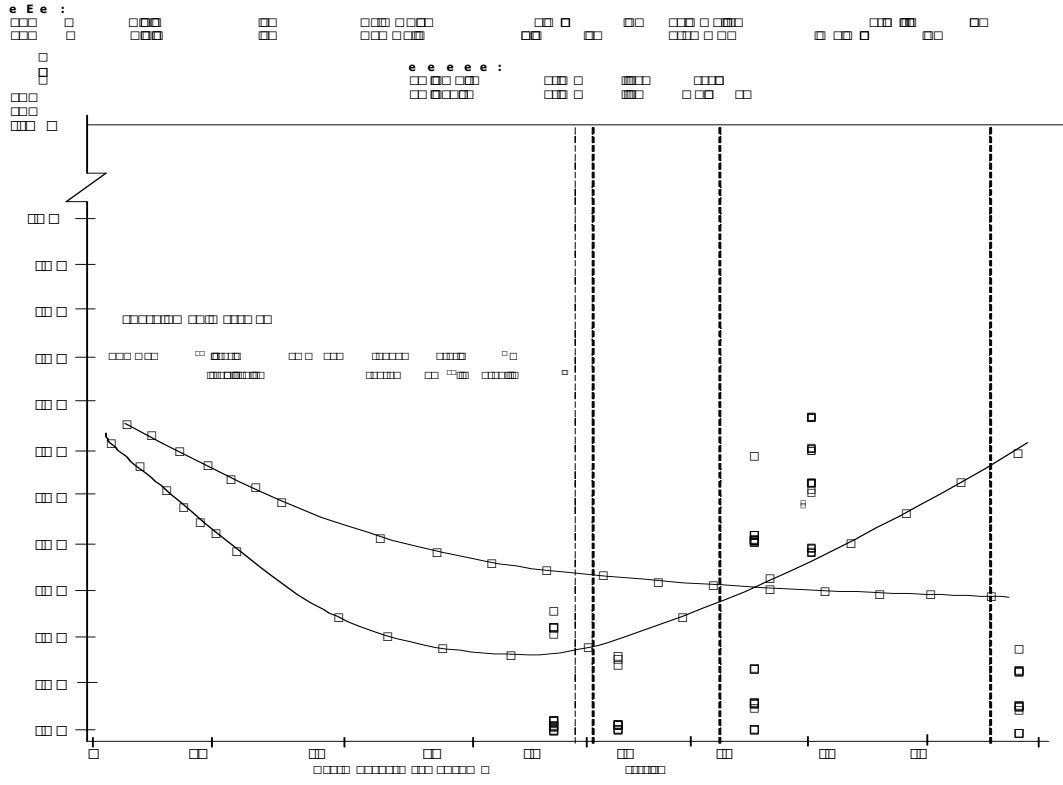


FIG 2: THE EFFECTS OF THE GOVERNMENT POLICY ON THE ECONOMIC GROWTH OF THE COUNTRY

