

## **Margin and Efficiency of Yam Marketing In Yewa North Local Government Area of Ogun State**

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**Abstract:** *The study analyzed the efficiency of yam marketing in Yewa North Local Government Area, Ogun State. The sources of data for this study are both primary and secondary sources. Purposive and random sampling techniques were used to select a total of 90 respondents. The data collected were analyzed using descriptive statistics, budgetary analysis and regression techniques. The result indicates that majority (64.4%) of the respondents were female with an average age of 43 years. Majority (67.8%) of the respondents were married, only (14.4%) of them were single. Most (50%) of the respondents practiced Christianity. Majority (56.7%) of respondents had 11-12 years of marketing experience with a mean of 16 years and family size ranging from 3-5 persons. Pest attack, bad roads and high cost of transportation, poor and instable price of yam were the problems encountered by the respondents in yam marketing. Households' size, Income and Cost of purchase in business as a processor are statistically significant in determining the profitability level of the respondents in the study area. In conclusion, the budgetary analysis of yam marketing in the study area showed the Gross Margin of ₦339,567.23 and Net Income of ₦307,320.93 showing that yam marketing is profitable in the study area. The Benefit-Cost Ratio (1.51) and Return on Investment (0.51) as a positive sign. Also, the Marketing Margin (₦34,146.77) and marketing efficiency (49.19%) showed a positive sign that yam marketing is efficient in the study area. It is therefore recommended that the ventures should be encouraged. Marketing and socio-infrastructure should be improved upon to enhance efficiency as well as taking into policy making the significant factors influencing efficiency.*

**Keywords:** *Yam, Households, Gross Margin, Efficiency*

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### **I. Introduction**

The term 'yam' refers to all members of the genus *Dioscorea*, which contains over 600 species. About 10 species are commonly cultivated for food, while a number of others are harvested from the wild in times of food scarcity (Bhandari et. al. 2003). Yam is an important food crop especially in the yam zone of West Africa, comprising Cameroon, Nigeria, Benin, Togo, Ghana and Cote de 'voire. This zone produces more than 90% of the total world production, estimated at 20 – 25 million tonne per year. Yams are major sources of income and have high cultural value. They are used in fertility and marriage ceremonies and a festival is held annually to celebrate its harvest. Consumer demand for yam is generally very high in this sub-region and yam cultivation is very profitable despite high production cost. (IITA, 2011). Yam tubers are eaten in different forms. These forms include eating it boiled, fried, pounded into fufu", and can be made into yam powder which can be made into fufu," Yam tuber can be stored on barns, cribs, underground as well as in blended powdered form. (Fasasi et al. 2005).

Yams are one of the most expensive crops to produce; the planting and harvesting processes require significant labor input, yam seeds are expensive, and the supply of seed is limited, Even though households are more likely to save their yam seed than sell the harvests, yams still represent a valuable component of farmers' agriculture income. Yams are an integral component of food consumption and agriculture sales in Nigeria. Relatively better off households are consuming more yams (particularly those acquired through purchases), but selling less harvested yam than poorer households. Poorer households consume fewer yams, but depend more heavily on yam sales and income than their richer counterparts.

Nigeria alone produces above 70% of the world total (FAO 2000). According to the food and agricultural organization report, in 1985, Nigeria produced 18.3 million tonnes of yam from 1.5 million hectares, representing 73.8 percent of total yam production in Africa. According to 2008 figures, yam production in Nigeria has nearly doubled since 1985, with Nigeria producing 35.017 million metric tonnes with value equivalent of US\$5.654 billion. In perspective, the world's second and third largest producers of yams,

Cote d'Ivoire and Ghana, only produced 6.9 and 4.8 million tonnes of yam in 2008 respectively. According to the International Institute of Tropical Agriculture, Nigeria accounted for about 70 percent of the world production amounting to 17 million tonnes from land area 2,837,000 hectares under yam cultivation.

Yams are versatile staples to address food and nutrition security and produce more food per unit area of land, compared to many other crops; yam and cassava, though longer in their cropping cycle, are vital in the annual cycle of food availability due to their broader adaptation to organisms and their physically surrounding, diverse maturity period and in-ground storage capability, permitting flexibility in harvesting period for sustained food availability; these crops are also capable in efficiently converting natural resources into a more usable product, caloric energy in the growing season, which is the highest of all major arable crops; almost double that of wheat and rice; they are a cheap but nutritionally rich staple food that contributes protein, vitamin C, vitamin A, zinc, and iron to meeting the dietary demands of the region's fast-growing towns and cities, they have high demand in local and national markets, they are far less susceptible to large-scale market shocks and price speculation experienced by more widely traded staples, such as grains, during international market crises (as in the food crisis of 2007–2008). As such they contribute to a more stable food system and predictable source of income.

Markets and marketing has long been the focus of investigation by the experts who have qualitatively studied it, where in general the producers have been the focus of attention. However, the most important section of marketing lying between the producers and consumers referred to as "the marketing margin" has been totally ignored. Marketing margin is an equilibrium entity that is a function of the difference between the equilibrium of retail and farm prices (Wohlgenant, 2001). Marketing margin provides neither a measure of farmer's wellbeing nor of the marketing firms' performance. However they give an indication of the market structure and efficiency. Food marketing is a very important but rather neglected aspect of agricultural development. In developing countries, more emphasis is usually placed on policies to increase food production with little or no consideration on how to distribute the food produced efficiently and in a manner that will enhance increased productivity.

Marketing is defined as a process of satisfying human needs by bringing products to people in the proper form and at a proper time and place. Marketing has economic value because it gives form, time, place, utility to products and services. The marketing of agricultural products begins at the farm when the farmer harvests his products. The product when it is harvested cannot usually go directly to the consumers. Firstly, it is likely to be located some distance from the place of consumption in regular and continuous manner throughout the year. Secondly, storage is required to adjust supply to meet demand. Thirdly, a product when it has been harvested is rarely in a form acceptable to consumers. Therefore, it must be sorted, cleared and processed in various ways and must be presented to the consumers in convenient quality and quantities for sale. Finally the farmer expects payment when his produce leaves his possession, and hence some financial arrangements must be made to cover all the various stages until the retailer sells the products to the final consumer. Marketing covers all business functions including production and in its broadest sense, it also covers production decision. So it can be argued that in farming such decision as the variety of crops to grow or the breed of animal to keep are marketing decisions. The primary role of an integrated marketing system is to add form, place, time and possession utility, so that the subjective satisfaction of consumers is maximized.

Food marketing is a very important but rather neglected aspect of agricultural development. In developing countries, more emphasis is usually placed on policies to increase food production with little or no consideration on how to distribute the food produced efficiently and in a manner that will enhance increased productivity (Robert et. al. 2012).

### **Objectives of the Study**

The broad objective of the study is to examine the effectiveness of margin and efficiency analysis of yam marketers in Yewa North Local Government Area of Ogun State, Nigeria.

The specific objectives are to:

- i. determine the cost and return structure of yam marketing in the study area;
- ii. estimate the marketing margin and marketing efficiency of yam; and
- iii. examine the effect of socio-economic variable on yam marketing efficiency.

## **II. Research Methodology**

### **Study Area**

The study area is Yewa North Local Government Area, formerly Egbado North Local Government Area, has its Headquarters in Ayetoro. It came into existence via Local Government Area Edict No.9 of 1976. The Local Government Area shares its boundaries with other sister Local Government Areas and a sister nation as follows: North - Imeko\Afon Local Government Area, South - Yewa South Local Government Area, West - The Republic of Benin, East - Partly by Abeokuta North and Ewekoro Local Government Areas respectively.

According to the National Population Commission (2006 census), Yewa North Local Government Area has a population of about 181,826. Among the twenty Local Government Area in Ogun state, it has the largest expanse of land with a size of 200,213.5 hectares. The inhabitants are mainly Yoruba, speaking various dialects. They comprises of the yewa and the ketus. The Local Government Area is essentially a semi-savanna vegetation area endowed with conducive climatic conditions for agricultural pursuits throughout the year, its tropical nature is also an added advantage for Agriculture (Wikipedia). Their major occupation is farming, consequent upon the large expanse of fertile land with a large deposit of mineral resources for industrial potentials. For administrative convenience, the Local Government Area was divided into eleven wards, namely:- Ayetoro Ward I, Ayetoro Ward II, Idofi Ward, Sunwa Ward, Ijoun Ward, Eggua Ward, Ohunbe Ward, Igbogila/Ibese Ward, Joga-Orile/Ibooro Ward, Imasai Ward.

### **Sources and Methods of Data Collection**

Both primary and secondary data were used for the study. The primary data were collected through the use of well-structured (pre-tested) questionnaire, while the secondary data were obtained from published journals, books, Internet, periodicals, government official websites and other relevant sources.

### **Sampling Techniques**

A combination of purposive and random sampling techniques was used to select the respondents used for the study. Firstly, Yewa North Local Government Area known for yam marketing was purposively selected. Secondly, nine (9) villages were randomly selected. And lastly, ten (10) yam marketers were sampled in each village, making a total of 90 respondents.

### **Methods of Data Analysis**

The data obtained from this study were analyzed using both descriptive and inferential analytical techniques. The statistical tools used are presented below in line with the study objectives.

### **Describe the Socio-economic Characteristics of the Respondents**

Descriptive statistical tools were used in analyzing this objective. The statistical tools included frequency distribution tables and percentages, charts, measures of central tendency and proportions.

### **Determine the Cost and Return Analysis of Yam Marketing**

Cost and returns analysis were used to estimate the cost and return structure of yam marketing in the study area. The Net Farm Income (NFI) was obtained thus:

$$NFI = TR - TC$$

$$TC = TFC + TVC$$

Where:

TR = Total revenue from the enterprise (Naira)

TVC = Total Variable Cost from enterprise (Naira)

TFC = Total Fixed Cost of enterprise (Naira)

TC = Total Cost of Enterprise (Naira)

NFI = Net Farm Income (Naira)

Profitability ratio such as Benefit-Cost Ratio, Return on investment were used to analyze profitability and viability of yam farming.

$$BCR = TR/TC$$

Where;

BCR = Benefit Cost Ratio

TR = Total Revenue

TC = Total Cost

Return on Investment (ROI) = Profit/Total Cost

### **Market Margin and Marketing Efficiency of Yam**

With respect to the marketing and profit margins of among the various components on the distribution chain of yam, the Deconstructed Marketing Margins were used. The Deconstructed Marketing Margin allows for the estimation of marketing margins and profit margins. The marketing margin is computed as the difference between the cost of purchasing yam and the total revenue derived from the sale of yam. Following Tuffour and Dokurugu (2015), the formulae are specified as follows:

$$MM = \frac{\sum_1^N [TR - TC]}{N}$$

Where:

TR = Total Revenue

TC = Total Cost

N= Sample size

Marketing efficiency (ME) as Abdou (2004) indicated is given in the form:

$$ME = 100 - \left[ \frac{MM}{MC} \times 100 \right]$$

Where:

MC = Total Marketing Cost;

MM = Total Marketing Margin

According to Abdou (2004) the marketing efficiency estimates marketing margins as representing the difference between purchasing and selling prices of marketers compared to the real marketing costs. A positive sign estimates would justify application of such services, making it efficient, and a negative estimate would indicate otherwise.

### Effect of Socio-economics Variables on Yam Marketing Efficiency

Multiple regression model was used to determine the factors influencing marketing efficiency, the model is implicitly stated thus:

$$Y = \beta_0 + \beta_i X_i + \varepsilon$$

Where:

Y = dependent variable = Marketing efficiency index (%)

$\beta_0$  = constant

Coefficient of  $X_i$

$X_i$  = Independent variables

U = Error

$X_1$  = Age (years)

$X_2$  = Years of formal education

$X_3$  = Household size (Number)

$X_4$  = Income (₦)

$X_5$  = Trading Experience (years)

$X_6$  = Credit use (credit use = 1, otherwise = 0),

$X_7$  = Cost of purchase (₦),

$X_8$  = Transportation cost (₦)

### Problems Militating against Yam Marketers in the study area

Descriptive statistical tools were used in analyzing this objective. The statistical tools included frequency distribution tables and percentages, charts, measures of central tendency and proportions.

## III. Results And Discussion

**Table 1: Socio-Economic Characteristics of the Respondents**

Variables	Frequency	Percentage	Mean
<b>Sex</b>			
Male	32	35.6	
Female	58	64.4	
<b>Age (years)</b>			
24 ≤ 30	12	13.3	43 years
31 ≤ 40	23	25.6	
41 ≤ 50	38	42.2	
51 ≤ 60	14	15.6	
61 ≤ 65	3	3.3	
<b>Marital Status</b>			
Single	13	14.4	
Married	61	67.8	
Widow	10	11.1	
Divorced	6	6.7	
<b>Educational Level</b>			
Primary school	19	21.1	
Secondary school	49	54.4	
Tertiary school	3	3.3	
No formal education	19	21.1	
<b>Household Size</b>			

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3-<5 persons	62	68.9	5 persons
6-<8 persons	27	30.0	
9-<10 persons	1	1.1	
<b>Religion</b>			
Christianity	45	50.0	
Islam	42	46.7	
Traditional	3	3.3	
<b>Occupation</b>			
Artisanship	19	21.1	
Farming	42	46.7	
Yam marketing	29	32.2	
<b>Marketing Experience</b>	21	23.3	16 years
3 ≤ 10 years	51	56.7	
11 ≤ 20 years	13	14.4	
21 ≤ 30 years	3	3.3	
31 ≤ 40 years	2	2.2	
> 40 years			
TOTAL	90	100	

Source: Field Survey, 2017

Data in Table 1 revealed the socio-economic characteristics of the sampled respondents in terms of the characteristics of the household composition and living conditions.

Sex has been found to influence access to productive resources. Access to productive resources, on the other hand, could affect the level of investment in yam marketing. It is therefore necessary to describe the sex of the respondents for possible inference and generalization on how it relates to yam marketing. As shown in Table 1, majority (64.4%) of the respondents was females. This implies that yam marketers in the study area were predominantly female. This finding conforms to the general notion that women are relatively more prominent in farm produce marketing than their male counterparts.

Age classification is relevant to this study in that physical ability and productivity depend on age and this will influence their investment positively or negatively. The result revealed that about 42.2% of the respondents in the study area were within the ages of 41 – 50 years with a mean age of 43 years. This means that they are still in their active productive ages; an economic active age that can make positive contribution to agricultural production which may translate to improved profitability of yam marketing. This finding is similar to the findings of Ugwumba and Omojola, (2012) that the average age of 47 years obtained for the yam farmers in Ipaio-Ekiti, Nigeria indicate that they were still in their active productive years.

Marital status is expected to influence respondents' level of responsibilities which could have positive or negative influence on their disposition to economic activities including the yam marketing. It can be seen that vast majority (67.8%) of the respondents were married while only about 14.4% of them were single. The majority of the respondents being married could become more productive and perhaps more efficient in yam marketing. According to Okpara (2010), married people are likely to be under pressure to produce more, and perhaps be more favourably disposed to marketing the yam.

Education is of great importance in decision making. The result in Table 1 also revealed that only 21.1% of the respondents had no formal education. However, altogether about 78.9% of the respondents had acquired one form of formal education or another. Notably, formal education is an essential tool for the adoption of effective communication system that encourages increase in the marketing of any agricultural produce. Thus, with high level of literacy in the study area, yam marketers would easily adopt new marketing strategy which could improve their levels of profits *ceteris paribus*.

Household size may determine the family labour at the disposal of a yam marketer. Finding revealed that majority (68.9%) of the respondents had family size ranging from 3 – 5 persons. The average household size is 5 members. The implication of this is that most respondents have moderate families. The moderate household size could maintain a good balance between the household's consumption expenditure and investment expenditure in yam marketing. Banmeke (2010) asserts that household size is an important index in any rural development intervention which can affect the outcome of such intervention. Analysis of the religion of the respondents revealed that half (50.0%) of the respondents practiced Christianity as religion while 46.7% of them were Muslims and only 3.3% did not practice Christianity and Muslim. Substantial percentages of the two dominant religions are well represented in the study area.

Main occupation of respondents is likely to take more of their time. The capability of the occupation to compensate for time spent could make the difference efficiency and margin of the yam marketing by the respondents. An evaluation of the main occupation of the respondents revealed that majority (46.7%) of the respondents engaged in farming as their main occupation. Besides, a sizeable number of the respondents

engaged in yam marketing (32.2%) and artisanship (21.1%) as their main occupation. This implies that yam marketing in the study area was mostly done not as the main occupation.

Experience is an important determinant of efficiency and perhaps profitability. According to a priori expectation, marketing experience is expected to have positive relationship with efficiency and profitability of the yam marketing. The result revealed that 56.7% of the respondents had 11-20 years of marketing experience with a mean of 16 years. This shows that the managerial ability of the marketer can be inferred to be reasonably good. It is of the general opinion that experience marketer would be more efficient, have a better knowledge of climatic conditions and are thus expected to run a more efficient enterprise (Oluwatayo et al., 2008). The more experienced one is the lower the profit inefficiency.

### **Determine the Cost and Return Structure of yam marketing**

Budgeting analysis was used to determine the return to yam marketing in the study area. The analysis indicating Total Revenue (TR), Total Cost (TC), Total Variable Cost (TVC), Total Fixed Cost (TFC), Gross Margin (GM), Net Farm Income (NFI), Benefit-Cost Ratio (BCR) and Return on Investment (ROI) are presented in Table 2.

The yam marketers incurred several costs in the course of marketing. These costs were variable costs. The variable costs were expenses on cost of yams, hired labour, transportation and storage while the fixed costs include depreciation costs of heaps, basket, interest on loan, etc. It could be seen from Table 2 that yam marketers in the area spent ₦572,586.61 on variable cost items, representing 94.67% of the total cost of marketing. Out of this percentage, cost of yams accounted for 51.84%, hired labour 16.66%, transportation 15.03% and the least variable cost item was storage cost with 11.14%. In all, an average of ₦604,832.91 were expenses the marketers incurred. Further result of the analysis in Table 2 generated positive gross margin, net farm income, benefit-cost ratio and return on investment values of ₦339,567.23, ₦307,320.93, 1.51 and 0.51 to prove yam marketing enterprise profitable in the study area. Return on investment was 0.51, implying that the marketers' returned ₦0.51 for every ₦1.00 invested in the business. This implies that yam production in the study area is a profitable business.

**Table 2: Estimated Profitability of Yam production**

<b>Variables</b>	<b>Amount (₦)</b>	<b>% of Total cost</b>
Total Revenue (TR)	912,153.84	
Variable cost:		
Cost of Yam	313,562.86	51.84
Hired labour	100,750.00	16.66
Transportation	90,884.62	15.03
Storage	67,389.13	11.14
Total Variable Cost (TVC)	572,586.61	94.67
Total Fixed Cost (TFC)	32,246.30	5.33
Total Cost (TC = TVC + TFC)	604,832.91	100.0
<b>Gross Margin (GM = TR – TVC)</b>	<b>339,567.23</b>	
<b>Net Farm Income (NFI = TR – TC)</b>	<b>307,320.93</b>	
<b>Benefit-Cost Ratio (BCR= TR/TC)</b>	<b>1.51</b>	
<b>Return on Investment (ROI = NFI / TC)</b>	<b>0.51</b>	

Source: Field Survey, 2017

### **Market Margin and Marketing Efficiency of Yam**

The result of the marketing margin and marketing efficiency analysis is given in Table 3. The result revealed that the marketing margin was ₦34,146.77 with a marketing efficiency of 0.49. A positive sign estimates would justify application of yam marketing in the study area efficient.

**Table 3: Marketing Margin, and Marketing Efficiency Estimates**

<b>Parameter</b>	<b>Value</b>
Revenue	912,153.84
Cost	604,832.91
Revenue – Cost	307,320.93
Total Number of respondents	90
<b>Marketing Margin (MM)</b>	<b>34,146.77</b>
Marketing Cost = Cost	604,832.91
Marketing margins = MM x 90	307,320.93
<b>Marketing Efficiency (ME)</b>	<b>49.19%</b>

Source: Field Survey, 2017

**Effect of Socio-Economic Variables on Yam Marketing Efficiency**

The factors affecting the marketing efficiency of yam marketers in the area were analyzed in Table 4. The regression model the F-ratio was significant showing the overall significance of the result. The Adjusted R<sup>2</sup> was 0.750 which implies that about 75.0% of the variation in the market efficiency was explained by the explanatory variables. From the regression equation, three variables, household size, income, and cost of purchase were the significant variables influencing the marketing efficiency of yam marketers. The household size of the yam marketers had a direct relationship on the marketing efficiency meaning that higher household size positively influenced marketing efficiency. Income also had a direct relationship with the marketing efficiency which means that the higher the income derived from the marketing of the commodity the more efficient is the marketing system.

Cost of purchase had a significant negative influence on the marketing efficiency index. This equally conforms to a priori expectation because increase in cost of purchase, will bring about reduction in the profit as well as level of efficiency.

**Table 4: Regression Result of Factors Influencing Marketing Efficiency Index**

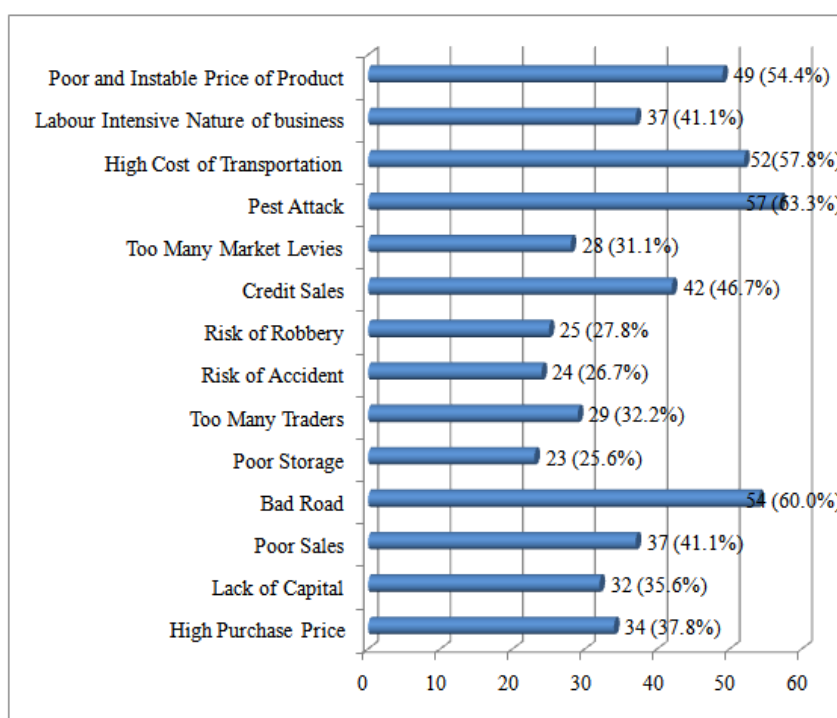
Variables	Coefficient	T-value
(Constant)		0.077
Age	-0.012	-0.167
Educational level	-0.073	-1.272
Household Size	0.114*	1.850
Income	0.941***	15.584
Years Of Trading Experience	-0.104	-1.356
Credit Use	0.084	1.435
Cost of Purchase	-0.503***	-7.742
Transportation Cost	-0.090	-1.530
R-Square	0.772	
Adjusted R-Square	0.750	
F-Value	34.295***	

\*\*\* Significant at 1% and \* Significant at 10%

Source: Field Survey, 2017

**Problems militating against yam marketers in the study area**

The results of Figure 1 showed that the respondents considered pest attack (63%) a major constraint and it ranked first among the identified constraints. This is because they are constraints to the yam farmers both on the field and when in storage. Those attacked by pest and disease result in losses reflected by fall in the price of the yam due to reduction in quality.



**Figure 1: Problems militating against yam marketers**

Bad road and High cost of transportation (60.0% and 57.8%) were considered the next problem because yam is heavy and fragile, so transporting it can be difficult and costly especially on a bad road. It is often transported manually using head pans or baskets. Difficulty in transporting yam output to market could result in low income and losses resulting from breakages and spoilage. Poor and instable price of yam (54.4%) was also considered a problem. Other problems include, credit sales, poor sales, labour intensive nature of business, high purchase price and lack of capital. This is so because credit is important to enhance access to inputs and marketing costs like storage and transportation.

#### **IV. Conclusion and Recommendations**

The research into the marketing of yam in the study area showed, that the yam market in the area is competitive with a relatively high level of inequality among the traders. Based on the findings of the study, it can be concluded that although yam marketing was profitable, marketers still have the potential to increase their overall efficiency by 50.81% to maximize yield and profit in the study area. In terms of profitability, yam marketing was highly profitable in the study area with returns that could comfortably offset the cost of capital, with high marketing margin and efficiency. The efficiency level was significantly influenced by household size, income and cost of purchase. Based on the findings of this study, it is recommended that: Government should provide an enabling environment through the provision of needed infrastructural facilities especially good roads. 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 yam marketing. Also, as a venture that should be encouraged, marketing and socio infrastructure should be improved upon to enhance efficiency. The significant factors influencing efficiency should be taken into consideration in policy making.

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