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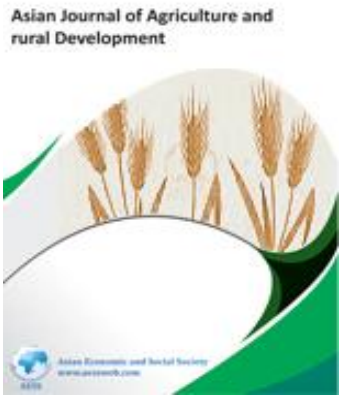

Estimation of Margins and Efficiency in the Ghanaian Yam Marketing Chain

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Estimation of Margins and Efficiency in the Ghanaian Yam Marketing Chain

Abstract

The main objective of the paper was to examine the costs, returns and efficiency levels obtained by key players in the Ghanaian yam marketing chain. A total of 320 players/actors (farmers, wholesalers, retailers and cross-border traders) in the Ghanaian yam industry were selected from four districts (Techiman, Atebubu, Ejura-Sekyedumasi and Nkwanta) through a multi-stage sampling approach for the study. In addition to descriptive statistics, gross margin, net margin and marketing efficiency analyses were performed using the field data. There was a long chain of greater than three channels through which yams moved from the producer to the final consumer. Yam marketing was found to be a profitable venture for all the key players in the yam marketing chain. Net marketing margin of about GH¢15.52 (US$9.13) was obtained when the farmer himself sold 100tubers of yams in the market rather than at the farm gate. The net marketing margin obtained by wholesalers was estimated at GH¢27.39 per 100tubers of yam sold, which was equivalent to about 61% of the gross margin obtained. Net marketing margin for retailers was estimated at GH¢15.37, representing 61% of the gross margin obtained. A net marketing margin of GH¢33.91 was obtained for every 100tubers of yam transported across Ghana's borders by cross-border traders. Generally, the study found out that net marketing margin was highest for cross-border yam traders, followed by wholesalers. Yam marketing activities among retailers, wholesalers and cross-border traders were found to be highly efficient with efficiency ratios in excess of 100%. However, yam marketing among producer-sellers was found to be inefficient with efficiency ratio of about 86%.The study recommended policies and strategies to be adopted by central and local government authorities to address key constraints such as poor road network, limited financial resources, poor storage facilities and high cost of transportation that serve as impediments to the efficiency of the yam marketing system in Ghana.

Keywords: Yam, Gross margin, Net margin, Marketing efficiency, Multi-stage sampling

Introduction

Background/State of the art

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. Food marketing by farmers and traders, mostly in the immediate post-harvest period, usually involves a lot of costs and in Ghana these costs are so high that lowering the costs through efficient

marketing system may be as important as increasing agricultural production.

The people of developing economies face the problem of food insecurity. In order to solve the problem of food insecurity, there is the need to ensure the supply of basic food stuffs at prices within the reach of the average consumer. Marketing of agricultural produce in most African countries has not yet achieved the necessary degree of competitiveness and transparency to ensure fair market prices for small-scale farmers, processors and consumers (Peterson, 2004). Market inefficiencies cause a net drag on the system leading to high prices and lack of growth. As a result of these conditions Ghana and other developing nations have been an ideal market for cheap imports in a liberalized global market environment (Meenakshi, 2004).

There is, however, a growing recognition among development agencies and governments that, if agricultural produce markets were efficient, the bargaining position of farmers with intermediate traders would be strengthened, their income would increase and less produce would go to waste. In addition, more efficient markets would help to lower transaction costs, increase the volume of trade, lower food prices and offer greater food security, leading to greater benefits for the economy as a whole (FAO, 2003).

Yams constitute an important source of food and income and play a major role in the socio-cultural life of a wide range of smallholder households. Due to its importance in the West African sub-region, yam has the potential to alleviate poverty and ensure food security among rural producers, traders, processors and consumers (Chukwu and Ikwelle, 2000; FAO, 1996). However, research on yam has focused more on pre-production issues to the neglect of post-harvest issues like marketing, storage and consumer demand. The link between the producer and the consumer is marketing. But the problems associated with transportation, wholesaling and retailing activities, commonly referred to as distribution activities in the yam sector, have been largely overlooked by researchers, particularly in Ghana (Bancroft**,** 2000). The purpose of this study was to examine the profitability and efficiency of yam marketing in Ghana.

Objectives of the study

The study addressed the following objectives:

- To estimate the volume of yam handled by key players in the yam marketing chain
- To determine the marketing costs incurred and margins obtained by major players along the yam marketing chain, and
- To assess the level of marketing efficiency at each stage of the yam value chain.

Methodology

Study areas/Sampling/Data Collection

The study was carried out in four administrative Districts in Ghana. The districts included Techiman and Atebubu in the Brong/Ahafo Region, Ejura-Sekyedumasi District in the Ashanti Region, and Nkwanta District in the Volta Region of Ghana. These districts were selected purposively due to their importance in yam production and marketing business in Ghana. Brong Ahafo region is the leading producer of yam in Ghana with the largest yam market located at Techiman. Atebubu, Ejura and Nkwanta are also major yam producing and marketing centers in Ghana. Yams are transported from these centers to other urban markets in Ghana and across the borders of Ghana.

A total of 320 players/actors in the Ghanaian yam industry were selected from the four districts for the study. A sample of 80 respondents consisting of 30 ware yam farmers, 30 retailers, 15 wholesalers, and 5 cross-border traders were selected from each district through a multi-stage sampling approach. Yam farmers were selected from three villages within each district. Whereas the villages were selected through a systematic random sampling technique, farmers in each village were selected through a simple random sampling approach. Wholesalers were stratified into *resident/sedentary* assemblers/wholesalers and *distant (itinerant)* wholesalers. Respondent wholesalers within each stratum were selected through simple random sampling. Also, all yam retailers and cross-border traders were selected through simple random sampling technique. Primary data for the study were collected through personal interviews with the use of standardized structured questionnaires. The interviews were conducted in local languages by trained Research Assistants with supervision by experienced Researchers.

Data Analysis

The data collected was analyzed using descriptive and inferential statistics. The descriptive statistics comprised the use of frequency distribution tables, percentages, arithmetic means and standard deviation. Estimates of marketing margins were obtained through gross margin analysis. The expression below was used to estimate Gross Margin for the various yam traders along the yam value chain.

Gross Margin = Total Revenue – Total Variable Cost

According to Kohls (1985), marketing margin equals the difference between what the consumer pays and the farm gate price per unit of the food produce. Based on this formula and on the assumption that wholesalers buy directly from farmers while retailers buy directly from wholesalers, it then follows that wholesalers' margin equals wholesalers' selling price per unit minus farmers' selling price per unit. Also, retailers' margin equals retailers' selling price per unit

minus wholesalers' selling price per unit. The net margin accruing to the wholesaler or the retailer is the difference between the gross marketing margin and the marketing costs. Marketing cost is the sum of transport cost, storage cost, labour cost and other costs associated with moving the commodity from the point of purchase to the customer or final consumer.

Marketing efficiency was calculated using the formula proposed by Olukosi and Isitor (1990) which is specified as:

Marketing efficiency = [Value added by marketing activities /Marketing costs] x 100% or

Marketing efficiency = [Net Margin /Marketing costs] x 100%

Results & Discussion

Characteristics of respondents

Table 1 provides the distribution of yam value chain players interviewed across the four yam districts. About 38% of the respondents were yam producers and 19% were yam wholesalers.

Table1: Key Players in the Yam Market Chain Selected for the Study

Key players in the yam marketing chain	District				Total*
	Ejura	Techiman	Nkwanta	Atebubu	
Yam producers	30	30	30	30	**120** ***(38%)***
Wholesalers	15	15	15	15	**60** ***(19%)***
Retailers	30	30	30	30	**120** ***(38%)***
Cross-border traders	5	5	5	5	**20** ***(6%)***
Total	**80**	**80**	**80**	**80**	**320** ***(100%)***

*Proportion of total number of respondents for each category in parenthesis.
Source: Field Survey, 2009

Table 2 shows that the average age of respondents was 40 years, implying that a typical actor in the yam value chain was in the economically active age group. The study found out that yam trading was the preserve of women whereas males dominated yam production. A typical player in the yam value chain had spent only six (6) years in school and therefore had attained primary level of education. Household size was estimated at about six (6) persons.

Table 2: Descriptive Statistics

Player in the chain	Age (*years*)	Sex(*% female*)	Years in school	Household size
Yam producers	44.6	20	5.3	6.3
Wholesalers	39.4	100	6.2	5.2
Retailers	38.1	100	4.8	5.5
Cross-border traders	40.7	100	8.2	5.1
Pooled sample	**40.0**	**70**	**6.1**	**5.5**

Source: Field Survey, 2009

Yam marketing channels

Figure 1 summarizes the product pathway for yam in a typical yam producing district. In all, about five different marketing channels were identified. It is evident from the channels that wholesalers are important players in the yam marketing chain. They support local yam distribution through retailers and yam exports through cross-border traders.

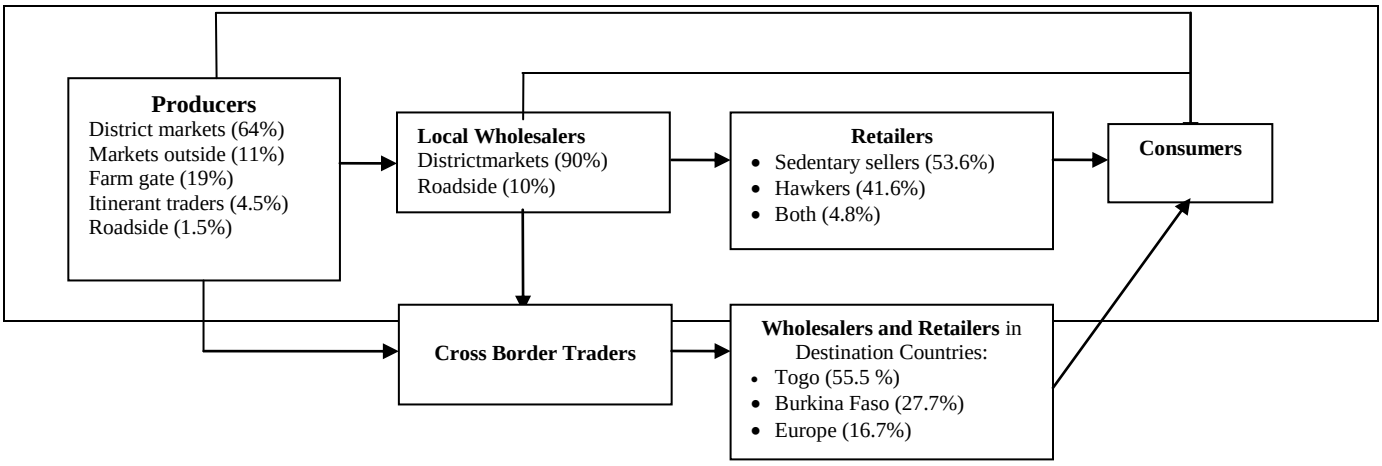

Figure 1: Yam marketing Channels for the pooled sample

Source: Researchers' construct

Volume of yam traded by producers and prices

Sales volume and yam prices for the 2009 main yam season have been provided in Table 3. A typical yam producer sold about 3,887 tubers during the main season at a unit price of GH¢76/100tubers at the farm gate and GH¢109.00/100 tubers in the main market. The difference between the farm gate and main market price was found to be GH¢33.00 for every 100 tubers of yam. Yam price was highest in Nkwanta and lowest in Ejura. However, the difference between farm gate price and market price was lowest in Techiman and highest in Nkwanta.

Table 3: Sales volume handled by producer-sellers and price of yam

District	Quantity of yam sold (tubers)	farm gate price (GH¢/100 tubers)	price in main market (GH¢/100 tubers)
Ejura	2,473.33	68.62	95.52
Techiman	1,275.00	74.13	97.73
Nkwanta	5,900.37	81.18	134.14
Atebubu	4,238.12	77.83	109.92
Pooled sample	**3,887.23**	**75.64**	**109.11**

Source: Field Survey, 2009

Marketing Costs and Margins for producer-sellers

Table 4 shows the margins obtained by farmers when yams were sold in the main district market instead of the farm gate. The average value of 100tubers of yam was found to be GH¢75.64 at the farm gate compared to GH¢109.11 in the main district market. This means that farmers who sold their produce directly in the district market obtained a gross margin of GH¢33.47 per 100tubers more than farmers who sold yams at the farm gate. However, an average cost of GH¢17.95 was incurred on various activities that got the produce onto the market. The table shows that net marketing margin of about GH¢15.52 was obtained per 100tubers of yams sold in the market by the farmer himself. The highest marketing margin of GH¢44.50 was obtained by farmers in Nkwanta and the lowest margin of GH¢13.93 was received by farmers in Atebubu district.

Table4: Marketing Margin Analysis for 100 Tubers of Yam Sold by Farmers in the Market

Item (GH¢)	Ejura	Techiman	Nkwanta	Atebubu	Pooled sample
A. Gross Revenue (Value in Main market)	95.52	97.73	134.14	109.92	109.11
B. Cost of produce (Value at farm gate)	68.62	74.13	81.18	77.83	75.64
C. Gross Margin (A-B)	**26.9**	**23.6**	**52.96**	**32.09**	**33.47**
Marketing costs:					
Transportation (T&T)	5.97	3.45	4.27	5.16	4.21
Loading & Off-loading	2.95	2.52	2.64	1.36	2.15
Market toll	0.5	1.75	1.55	1.35	1.3
Other costs	-	-	-	10.29	10.29
D. Total Marketing costs	**9.42**	**7.72**	**8.46**	**18.16**	**17.95**
NET MARKETING MARGIN (C-D)	**17.48**	**15.88**	**44.50**	**13.93**	**15.52**

Source: Estimated from field data, 2009.

Volume of yam handled by wholesalers and yam prices

Yam wholesalers normally sent their yams to Kumasi, Accra, Hohoe and other major cities and towns in Ghana. From these destination markets, many retailers came to buy yams from wholesalers for further distribution in various satellite markets and communities. Table 5 provides yam purchase volumes, purchase price and related marketing costs per weekly trip. On average, a typical wholesaler purchased about 1,352 tubers of yam per week at a price of GH¢ 73.00/100 tubers. The total cost incurred on transportation was estimated at GH¢61.00 whereas loading and offloading cost traders about GH¢14.00 per weekly trip. Total market toll paid per week amounted to about GH¢5.00. Yam purchase price was highest in Ejura

at GH¢86.00/100tubers and lowest in Nkwanta at GH¢57.00/100tubers. Wholesalers in Ejura incurred higher transportation cost and those in Techiman spent the least amount on transportation of yams every week.

Average selling price of yam in the destination markets was estimated at GH¢118/100tubers. This price was about 62% higher than the purchase price in the source markets. The difference between yam prices in destination and source markets was highest for traders in Nkwanta and lowest for traders in Techiman.

Table 5: Weekly Purchase Volume and yam prices during

District		Quantity of yam (tubers) purchased	Cost price (GH¢/100 tubers)	Selling price (GH¢/100 tubers)
Atebubu	Mean	1250.00	71.16	105.56
	Std. Deviation	632.69	29.77	20.64
Ejura	Mean	1293.87	86.33	138.67
	Std. Deviation	1196.73	20.74	22.32
Nkwanta	Mean	1018.89	56.72	124.44
	Std. Deviation	1730.25	45.77	46.70
Techiman	Mean	1864.71	79.23	105.53
	Std. Deviation	979.76	28.77	21.54
Pooled Sample	**Mean**	**1352.18**	**72.86**	**117.86**
	Std. Deviation	**1220.55**	**49.64**	**60.51**

Source: Field Survey, 2009

Yam Marketing Costs and Margins Analysis for Wholesalers

Table 6 provides an analysis of margins obtained by wholesalers by handling 100 tubers of yams. When purchase prices in the supply markets were compared with the selling prices in destination markets a wholesaler obtained about GH¢45.00 as gross margin per 100 tubers of yam sold. The gross revenue obtained by wholesalers in Techiman was the lowest and that obtained by traders in Nkwanta was the highest. Total marketing costs incurred by wholesalers ranged from a low of GH¢10.52 in Techiman to a high figure of GH¢21.74 in Ejura. The average marketing cost for the whole sample was found to be GH¢17.61 per 100 tubers of yam handled. Transportation and yam losses were the two most important cost components in the yam wholesale business. Generally, the two cost components together formed at least 55% of total marketing costs across all yam markets. On average, transportation and yam losses constituted about 40% and 24% of marketing costs respectively. Evidence from Table 6 shows that yam wholesaling was a profitable venture across all yam districts. The net marketing margin per 100 tubers of yam was estimated at GH¢27.39. The highest margin was obtained by wholesalers operating in Nkwanta and the lowest was received in Atebubu. Net marketing margin formed between 41% and 72% of gross margins across study districts. This implies that a Cedi invested in yam wholesale business earned a net margin of at least GH¢0.41.

Table 6: Marketing Margin Analysis per 100 Tubers of Yam Handled by Wholesalers

Item (GH¢)	Ejura	Techiman	Nkwanta	Atebubu	Total sample
REVENUE:					
A. Gross Revenue *(Value in Destination market)*	138.67	105.53	124.44	105.56	117.86
B. Cost of produce (*Value inSource market)*	86.33	79.23	56.72	71.16	72.86
C. Gross Margin (A-B)	***52.33***	***26.30***	***67.72***	***34.40***	***45.00***
MARKETING COSTS:					
Transportation	11.49	3.28	11.84	6.22	7.52
Loading & Offloading	1.34	0.76	1.6	1.01	1.11
Market toll	0.19	0.27	0.92	0.35	0.40
Value of yam losses	3.22	2.71	3.06	7.18	4.31
Other marketing costs	5.50	3.50	1.75	5.62	4.27
D. Total Marketing costs	***21.74***	***10.52***	***19.17***	***20.38***	***17.61***
Net Marketing Margin (C-D)	**30.59**	**15.78**	**48.55**	**14.02**	**27.39**

Source: Estimated from underlying field data, 2009

Volumes of yam handled by retailers and yam prices

The study identified three categories of yam retailers: sedentary sellers located at particular spots from where yams were sold to final consumers, hawkers who moved from place to place to distribute yams at the door steps of consumers, and retailers who combined both hawking and sedentary yam retailing activities. Table 7 provides the quantities of yam sold and selling price of yam across all districts for a typical week. On average a typical yam retailer sold 250 tubers per week at an average price of about GH¢1.00 per tuber.

Table7: Weekly sales volume and selling price of Retailers

District		Quantity of yam sold (tubers)	Selling price (GH¢/tuber)
Techiman	Mean	459.73	1.06
	Std. Deviation	599.95	0.48
Atebubu	Mean	199.81	0.96
	Std. Deviation	86.06	2.34
Ejura	Mean	101.33	0.97
	Std. Deviation	86.42	0.13
Nkwanta	Mean	245.67	1.10
	Std. Deviation	133.43	1.32
Pooled Sample	***Mean***	**250.05**	**1.03**
	Std. Deviation	**407.16**	**0.89**

Source: Field Survey, 2009

Yam Marketing costs and Margins Analysis for Retailers

Table 8 provides an analysis of margins obtained by retailers for handling 100 tubers of yams. The gross margin obtained by retailers was estimated at an average figure of GH¢25.16 per 100 tubers. The figure ranged from a minimum of GH¢20.00 in Ejura to a maximum of GH¢32.26 in Nkwanta. The average marketing cost was found to be GH¢10.00 per 100tubers and the highest marketing cost was incurred by retailers in Ejura. It may be evident from the table that yam retailing was a profitable venture across all the yam producing districts. Net marketing margin was estimated at GH¢15.37 for 100 tubers of yam and it ranged between GH¢6.00 in Ejura and GH¢24.00 in Nkwanta. It could be inferred from the table that net marketing margin constituted 28% of gross margin in Ejura and as high as 82% of gross margin in Techiman.

Table 8: Marketing Margin Analysis per 100 tubers of yam handled by Retailers

Item (GH¢)	Ejura	Techiman	Nkwanta	Atebubu	Pooled sample
RENENUE:					
A. Gross Revenue (Selling Price)	96.67	106.36	109.89	96.25	102.86
B. Cost of produce (Cost price)	76.67	81.21	77.63	74.4	77.7
C .Gross Margin (A-B)	**20.00**	**25.15**	**32.26**	**21.85**	**25.16**
Marketing costs:					
Transportation	5.74	2.01	5.16	5.22	4.36
Loading & Offloading	2.76	0.59	1.45	2.61	2.19
Market toll	2.17	0.1	0.6	0.86	0.59
Value of yam losses	3.67	1.83	1.38	4.19	2.65
D. Total Marketing cost	**14.34**	**4.53**	**8.59**	**12.88**	**9.79**
Net Marketing Margin (C-D)	**5.66**	**20.62**	**23.67**	**8.97**	**15.37**

Source: Estimated from field data, 2009

Trade volume handled by cross-border traders and yam prices

Majority (56%) of cross-border traders sent yams to Togo and 28% of them sent yams to Burkina Faso. Some few traders also sent yam to Europe via Accra. Table 9 provides information on quantities purchased by cross-border traders and yam purchase price for a typical trip in the 2009 yam season. Traders purchased an average quantity of 3,106 tubers of yam per trip at an average price of GH¢72.86/100tubers. Volume of yams purchased was found to be highest in Nkwanta and lowest in Atebubu.

Table 9: Purchase volumes and Purchase price of yam for a typical trips in 2009

District		Quantity purchased (tubers)	Unit price (GH¢/100 tubers)
Ejura	Mean	3306.67	86.33
	Std. Deviation	6218.73	20.74
Techiman	Mean	3022.50	79.23
	Std. Deviation	4029.23	28.77
Nkwanta	Mean	5000.00	56.72
	Std. Deviation	3559.03	45.77
Atebubu	Mean	1426.67	71.16
	Std. Deviation	481.80	29.77
Pooled Sample	Mean	3106.47	72.86
	Std. Deviation	3351.20	49.64

Source: Field data, 2009

Marketing costs and margins Analysis for cross-border yam traders

Table 10 provides the marketing margin analysis for cross-border traders. Gross margin among cross-border yam traders ranged from a low of GH¢50.78 in Nkwanta to a maximum of GH¢55.51 per 100 tubers in Atebubu. The average gross margin for the total sample was estimated at GH¢53.82 for every 100 tubers transported across Ghana's borders. Average marketing cost incurred on 100 tubers of yams sent across the borders of Ghana was found to be GH¢19.91 per trip. Marketing cost, however, varied across yam producing districts. Marketing cost was found to be between 38% and 42% of gross marketing margins in Nkwanta and Techiman respectively. Results in the table show that cross-border yam trading was a profitable venture. The net marketing margin was found to range between a low of GH¢30.62 per 100tubers of yam in Techiman to a maximum of GH¢33.24 per 100tubers in Ejura district.

Table10: Marketing Margin Analysis per 100 tubers of yam handled by cross border traders

Item (GH¢)	Ejura	Techiman	Nkwanta	Atebubu	Total sample
A. Gross Revenue (Selling Price)	140.83	132.5	107.5	126.67	126.68
B. Cost of produce (Cost Price)	86.33	79.23	56.72	71.16	72.86
C. Gross Margin	***54.5***	***53.27***	***50.78***	***55.51***	***53.82***
Marketing Costs:					
Transportation	9.6	10.2	8.8	11.21	9.95
Loading & offloading	0.6	0.89	0.56	1.97	0.81
Value of yam loss	6.13	5.37	4.68	6.22	4.36
Costs at road Barriers	1.33	1.59	1.21	1.57	1.43
Duties paid at Borders	1.5	1.4	1.16	1.34	1.33
Other costs	2.1	3.2	2.9	0.35	2.03
D. Total Marketing costs	***21.26***	***22.65***	***19.31***	***22.66***	***19.91***
Net Marketing Margin (C-D)	**33.24**	**30.62**	**31.47**	**32.85**	**33.91**

Source: Estimated from field data, 2009

Summary on Yam Marketing Margins and Marketing Efficiency analysis

Table 11 provides a summary of the marketing margins analysis and the resultant marketing efficiency levels estimated for various players in the yam value chain for 100tubers of yam. Results in the table show that yam trading was a profitable venture for all categories of traders across all yam producing districts covered in the study. Net marketing margin was highest for cross-border yam traders (GH¢33.91) followed by wholesalers who obtained a net margin of GH¢27.39 on every 100tubers of yams sold. The net margins obtained by producer-sellers and retailers were found to be less than half the margins obtained by cross-border traders. Net marketing margin received by wholesalers was about 78% higher than that obtained by retailers and producer-sellers.

Table11: Yam Marketing Margins and Efficiency among Players in the Yam Value Chain

District	GH¢/100 tubers	Yam producers	Yam Retailers	Yam Wholesalers	Cross-Border yam traders
Ejura	Gross Margin	26.9	20	52.33	54.5
	Marketing costs	9.42	14.34	21.74	21.26
	Net Marketing Margin	**17.48**	**5.66**	**30.59**	**33.24**
	Marketing Efficiency (%)	**185.56**	**39.47**	**140.71**	**156.35**
Techiman	Gross Margin	23.6	25.15	26.3	53.27
	Marketing costs	7.72	4.53	10.52	22.65
	Net Marketing Margin	**15.88**	**20.62**	**15.78**	**30.62**
	Marketing Efficiency (%)	**205.7**	**455.19**	**150**	**135.19**
Nkwanta	Gross Margin	52.96	32.26	67.72	50.78
	Marketing costs	8.46	8.59	19.17	19.31
	Net Marketing Margin	**44.5**	**23.67**	**48.55**	**31.47**
	Marketing Efficiency (%)	**526**	**275.55**	**253.26**	**162.97**
Atebubu	Gross Margin	32.09	21.85	34.4	55.51
	Marketing costs	18.16	12.88	20.38	22.66
	Net Marketing Margin	**13.93**	**8.97**	**14.02**	**32.85**
	Marketing Efficiency (%)	**76.71**	**69.64**	**68.79**	**144.97**
Pooled sample	Gross Margin	33.47	25.16	45	53.82
	Marketing costs	17.95	9.79	17.61	19.91
	Net Marketing Margin	**15.52**	**15.37**	**27.39**	**33.91**
	Marketing Efficiency (%)	**86.46**	**157**	**155.54**	**170.32**

Source: Researchers' computation from previous tables

Marketing efficiency is defined as the ratio between net marketing margin and marketing costs expressed as a percentage. A ratio of 100% (or 1.0) indicates efficient trading/marketing activities since marketing costs will exactly equal net marketing margin. It actually indicates a break-even point because the value addition (i.e. marketing cost) is equal to the net margin obtained as a result of the value addition. Marketing efficiency figure below 100% is indicative of inefficiency; more is spent on value addition compared to the margin received after value addition. From the table, it may be seen that yam marketing activities among retailers, wholesalers and cross-border traders were highly efficient with efficiency figures far greater than 100%. However, yam marketing among producer-sellers was found to be inefficient with marketing efficiency ratio of about 86%. Marketing of yams in Techiman and Nkwanta was efficient among all trader categories. However, yam marketing among retailers in Ejura and Atebubu was found to be inefficient. For the pooled sample, marketing of yam among all trader groups was found to be efficient except for producer-sellers.

In their assessment of the economics of yam marketing in *Abia* State in Nigeria, Ehirim et al. (2007) estimated marketing efficiency ratio of 125%, indicating that an increase in the cost of performing marketing service (that is added time, form and place utility) by 100 percent will give a more than proportionate increase of 25 percent in the level of satisfaction derived from a kilogram of yam sold in the market. Adinya and Awoke (2007) also performed an economic analysis of yam marketing in *Obubra* Local Government Area in *Cross River* State in Nigeria and found the profit margin of traders in different markets to range from N 4,939.80 to N 6,289.40. They concluded that yam marketing was a profitable business in the State.

Conclusion

The study examined marketing margins obtained and efficiency with which major players in the yam marketing chain conduct their activities. There was a long chain of greater than three different channels through which yams moved from the farm gate to final consumers. Evidence from the study showed that Majority (66%) of yam farmers sold their produce in the main district market and only 20% sold yams at the farm gate. An average net marketing margin of about GH¢15.52 was obtained when the farmers sold 100tubers of yams in the market rather than at the farm gate. The study provided evidence to suggest that yam wholesaling was a profitable venture in the study districts. The net marketing margin obtained by wholesalers was estimated at GH¢27.39 per 100tubers of yam sold, which was equivalent to about 61% of the average gross margin obtained. Yam retailing was found to be profitable in all the yam producing districts. Net marketing margin was estimated at GH¢15.37, which amounted to 61% of the gross margin obtained. The main destination markets for cross-border yam traders were identified as Togo and Burkina Faso. Their average gross margin and net margin were estimated at GH¢53.82 and GH¢33.91respectively for every 100tubers transported

across Ghana's borders. Generally, net marketing margin was highest for cross-border yam traders, followed by wholesalers. The net margins obtained by producer-sellers and retailers were less than half the margins obtained by cross-border traders. Net marketing margin received by wholesalers was about 78% higher than that obtained by retailers and producer-sellers.

Yam marketing activities among retailers, wholesalers and cross-border traders were highly efficient with efficiency figures in excess of 100%. However, yam marketing among producer-sellers was found to be inefficient with efficiency ratio of about 86%.The main constraints affecting yam marketing were identified as poor road network, limited financial resources, poor storage facilities and high cost of transportation. Among cross-border yam traders, however, harassment by police officers at road barriers was the main impediment to efficient yam marketing. Serious attention should, therefore, be given to these constraints by central and local government agencies to ensure that the yam marketing system functions optimally.

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