ECONOMIC ANALYSIS OF MARKETING OF PLANTAIN IN OSHIMILI SOUTH LOCAL GOVERNMENT AREA OF DELTA STATE

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ABSTRACT

The analysis of marketing of plantain in Oshimili South Local government Area of Delta State was carried out to examine the structure of plantain market in Oshimili South Local Government Area. Three town of plantain marketers were randomly selected from four purposively selected town with a total respondent of one hundred and twenty. Structued questionnaires were used to collect the data. Descriptive statistics, Cost and return analysis. Return per capital invested were used to analyse the data. The study showed that majority (96%) of the plantain marketers were female. 51.7% are within the active age range of 41-50 years. Most respondents are married and educated having a household size of between 1-10 members. The cost and return analysis showed that purchased cost, transportation, labour and storage cost constitute the variable cost and rent, tools and market charges forms the fixed cost. Furthermore, the findings showed that plantain marketing is profitable with a gross margin of N3,867.90 per month from the sales of plantain bunches. Analysis of the profit revealed that plantain marketing is a profitable business. The constraint militating against marketing of plantain in the area were also identified to be high transportation cost, seasonal price fluctuation, rapid deterioration in quality/spoilage, inadequate funds, high initial cost of plantain, poor access road and high market charges. The study therefore recommends plantain marketers should come together to form plantain marketers cooperative groups from which members could obtain loans at very low interest rates. Also problem of infrastructural facilities such as bad roads should be address by all tiers of government.

Key words: cost, gross margin, marketing, plantain, return

INTRODUCTION

Plantain (Musa paradisiaca) is one of the most important staple food crops for millions of people both in developed and developing countries. It supplies up to 25% carbohydrate for approximately 70 million people in the humid region of Sub Saharan Africa (Ferris, 1997 and Swennen, 1990). Plantain originated from South East Asia and Western Pacific region (John and Marchal, 1995). It belongs to the family of Musaceae, and they are of two types; Musa acuminate (genome AA) and Musa balbisiana (genome B13). However, a great diversity is said to exist in Central Africa, thus suggesting plantain to be among the oldest cultivated crops in the region (Ogazi, 1996).

Marketing of agricultural products begins at the farm level when the farmer plans his production to meet specific demands and market prospects. Plantain marketing involves all activities and services associated with the movement of produce from farmers' (producers) farms to the consumers. The role of marketing involves assembling of plantain bunches bit by bit by village collectors from the different places of production to the markets in the towns and cities. Like many other agricultural products, plantain is highly perishable and it is also seasonal in its supply and most plantains are produced by small scale farmers who often do not have the financial resources for sustained production. These physical characteristics and challenges of plantain production present some challenges to its marketing.

A study to ascertain the performance of plantain marketing in Oshimili South Local government area of Delta State, in view of the above situation was considered relevant. The consumption of plantain cuts across social, age, ethnic, religious and geographical barrier. Plantain is accepted and loved by Nigerians, plantain is a versatile food in the kitchen, it is commonly eaten as fried ripe plantain (dodo), boiled as green plantain and eaten with palm oil or stew or roasted 'Boll' and eaten as snack or as porridge. This reason plus the growing population of Nigeria leads to an enormous increase in demand for the crop in the consumers' market. Plantain has a high marketing prospect in most of the major towns and cities where its consumption and demand are on the increase (FDA, 2005)

Four types of plantain are common in Nigeria and these are categorized based on their bunch characteristics. The common types are: Horn type, French type, false type and French-horn type. The false horn type is the most widely distributed because of its ability to tolerate poor soil conditions. The producing States include Ondo, Ogun, Osun, Oyo, Cross-river, Imo and Abia State (Wikipedia, 2007b; Robinson, 1996). Plantain is the cheapest staple food crop in terms of production costs per hectare as compared to other food crops like maize and cassava. It produces fruits all year round, thus playing the role of 'the hunger-gap' between crop harvests. It gives high economic returns, reaches maturity and pays off its cost of establishment within a year. It is an important source of income for the resource-poor rural farmers. Plantain provides household food security and gainful employment to both rural and urban dwellers. Plantain production is environment-friendly being useful in combating soil erosion and as inter-crop in mixed farming system (FDA, 2005).

Some Efforts have been made towards tapping the economic potentials of plantain production through the boosting of its production to meet its ever growing local and international demand. The establishment of plantain development programme of the Federal Department of Agriculture, lbadan, Oyo State, is an example of such efforts. In order to encourage plantain and banana production both on small and large scale, the following plantain and banana enterprise are being advocated by the programme: establishment of nursery/small plot plantain and banana sucker production, establishment of small-holder plantain and banana farm, establishment of homestead/backyard plantain and banana garden, cottage/domestic processing of plantain and banana. The aspect of marketing to complement plantain development programme has not been given the expected attention. This is why this research study becomes necessary to ensure the sustainability of increased plantain production.

Studies on plantain shows that the business of plantain marketing is profitable (Folayan and l[3]ifarin 2011). High transportation cost, rapid deterioration in quality and spoilage, and seasonal price fluctuations are major challenges to plantain business. Some characteristics of many agricultural commodities such as high perishability and seasonality of the commodities also contribute to the challenges of the plantain marketing business. The need for a research study on analysis of marketing of plantain in Oshimili South Local Government area of Delta State became necessary. In order to understand plantain marketing situation in Oshimili South Local Government area of Delta State and to achieve good performance and efficiency in its marketing, this research study seeks to address the following objectives:

i. To describe the socio-economic characteristics of plantain marketers in Oshimili South Local Government area of Delta State;
ii. To determine the market activities and functions performed by plantain marketer.
iii. To describe the marketing channel of plantain in the study area.
iv. To analyse the efficiency of plantain marketing
v. To determine the profitability of plantain marketing and
vi. To identify constrains to efficient plantain marketing.

Marketing is the performance of all business activities involved in the flow of goods and services from the point of production until they are in the hands of the ultimate consumer (Panda, 2011). Therefore, efficient marketing is an important aspect of plantain production in addition to adoption of new technologies as they combine to determine expansion in plantain production and supply. A research study of the efficiency, performance and profitability of plantain marketing in Oshimili South Local Government area of Delta State that would help the producers of plantain produce more efficiently, it would help policy makers adopt and come up with policies that will influence the encouragement of plantain production and marketing, it would also enable the readers to have a deeper knowledge and understanding about plantain production in Oshimili South Local Government area of Delta State, Lastly the study will help marketers have a-prior knowledge of the market and also influence them to make the market more efficient and effective thereby enabling more profit.

METHODOLOGY

The study area, Oshimili South Local Government Area is found in Delta state, South-south political enclave of Nigeria with its headquarters in the town of Asaba. Towns and villages make up Oshimili South Local Government Area includes; Asaba, Okwe, Oka and Anwai. South LGA was created in the year 1997. The current total population of Oshimili uth Local Government Area is put at 603,413 inhabitants with the area primarily populated members of the Anioma ethnic division.

Oshimili south Local Government Area occupies a total area of 603 square kilometres and has

an average temperature of 26 degrees centigrade. The Local Government Area lies off the shores of the Niger River with the average humidity level in the area put at an estimated 76 percent.

***Sampling Procedure*:** Oshimili South Local Government Area of Delta State has four areas/ towns namely: Asaba, Okwe, Oko and

Anwai. Plantain markets for this study will be purposively sampled from three out of the four areas namely: Okwe, Oko and Asaba. These Areas have urban and semi-urban population settlements with markets where plantain marketers trade. The size of 40 plantain marketers from each of the study areas making a total of 120 plantain marketer \% ill he sampled. Plantain marketers that hawk plantain around in the markets or along the roads r' ill it be sampled.

***Method of Data Collection*:** The data used in this study was from primary sources. The primary source was through the use of structured questionnaires. Systematic random sampling technique will be used to select 120 plantain traders made up of wholesalers and retailers from three study areas.

Method of Data Analysis: Percentage, mean, and standard deviation were used to analyze the market structure or the marketing of plantain in Oshimili South Local Government Area of Delta State. Marketing Margin equation was used to determine the marketing of plantain margin as shown below: Marketing Margin= Pi—Pr Where Pf. = Producer prices (Pr = Retail price(4) Net profit equation was used to determine the net return of plantain marketers as shown below :

Marketing Margin = Pf -Pr

Where Pf = Producer prices (N)

Pr= Retail Price (N)

Net profit equation will be used to determine the net return of plantain marketers as shown below:

Net profit () =Total revenue minus total cost

I.e. = TR - TC

Shepherd-Futrel model will be used to analyze the marketing efficiency of plantain in the study area. This is shown below:

Marketing Efficiency Coefficient: Total Cost/Total Revenue X 100/1

The coefficient showed the proportion of total revenue that was put into the marketing cost. The lower the coefficient the more efficient the market and this expressed in percentage.

The factors affecting the efficiency of plantain in the study area will be estimated using the multiple regression model. This is as shown below;

$Me = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + U$

Where;

M_e = Marketing efficiency; X_1 = Price of a bag of fish feed (N); X_3 = Brand of the fish feed; X_4 = Transportation cost (N); X_5 = Number of plantain traded; β_0 = Intercept; and U = error term.

RESULTS AND DISCUSSION

Socio-economic Characteristics result shown in Table 1 reveals that 80% of the respondents were female. This finding exactly tallies with the result of Aregbesola (2001) and also support the report of Mayokun and Fisayo (2010) in which he estimated that 80% of all trades in food stuff in Nigeria is carried t by rural women. The result also reveals that respondent whose age range between 41-50years have the highest percentage (51.7%) followed by age range of 51-60 years (22.5%). This is an indication that people whose age range between 41-50 years are more involved in plantain marketing in the study area. This may imply that people of this age range are likely to be more energetic and willing to take risks involved in plantain marketing.

The result further reveals that 57.5% of the respondents are married with their husband/wives still alive. This implies that plantain marketing is a reliable source of income for the upkeep of the family. According to level of education attained by the respondents, the result reveals that a greater percentage (45%) have secondary education. This finding contrasts with Aregbesola (2001), in which he estimated that most respondents had no formal education. The implication of this could be that plantain marketing is taking care of unemployment as more educated people are getting involved in the business. The household size of the respondents shows that the highest range was between 1- 4 persons (51.7%) and the least m. as 7persons and above (20%). The result shows that the trend of having large family size which serves as a source of labour is fast disappearing and this is assumed to be due to adverse economic situation in the country.

Table 1: Distribution of the Respondents by their Socio-Economic Characteristics

Variables	Frequency	Percentage (%)	Mean
Sex			
Male	24	20	
Female	96	80	Female
Age			
<40 years	12	10	51.6
41-50 years	62	51.7	
51-60 years	27	22.5	
>60 years	19	15.8	
Marital Status			
Single	31	25.8	Married
Married	699	57.5	
Divorced	5	4.2	
Widowed	15	12.5	
Educational level			
Primary	38	31.7	Secondary
Secondary	54	45	
Tertiary	6	5	
No Education	22	17.3	
Household Size			
1-3	34	28	4-6 persons
4-6	62	51.7	
7 and above	24	20	
Business Experience			
1-10 years	83	69.2	
11-15 years	21	17.5	1-10 years
16-20 years	10	8.3	
Above 20 years	6	5	

Source: Computed from field data, 2021

Marketing Activities and Functions Performed by Plantain Marketers

The result from table 2 below reveals that 70% of the plantain marketing channels respondents are wholesalers. This could be an indication that plantain enjoys high demand. Most of the respondents (62.5%) get their plantain supply directly from the farmers. This could mean that marketers are sensitive to profit maximization. Majority of the respondents (57.5%) sell plantain in the market by bunch. Also 79.2% of the respondents belong to plantain marketers association.

Table 2: Frequency Distribution of the Respondents by their Plantain Enterprise

Variables	Frequency	Percentage (%)
Plantain Marketing Channels		
Wholesaler	84	70
Retailer	36	45
Source of Plantain Supply		
Directly from Farmers	75	62.5
From Wholesalers	27	22.5
From Retailers	18	15
Form of Plantain Supply		
By Heads	31	25.8
Bunch	69	57.5
Membership of Plantain Marketer Association		
Yes	95	79.2
No	25	20.8

Source: Computed from field data, 2021

Channel involved in Plantain Marketing

Plantain Marketing channel is the sequence or intermediaries through which produce pass producers to final consumers. Olukosi et al. (2007) defined marketing. agencies as the middlemen involved in carrying out marketing functions. They could be individuals or agribusiness organizations that specialize in performing the various marketing functions involved in the purchase or sale of agricultural commodities as they move from producers to consumers.

They are namely:

Marketing Channel (I): Wholesalers — Retailers — Consumers:

Marketing Channel (2): Wholesalers — Consumers:

Marketing Channel (3): Retailers — Consumers.

Three sets of agencies were identified in the plantain marketing system in the studs area, they are:

Wholesalers: These are merchants who buy plantain in large quantities. They purchase directly from the farmers and they have storage and preservation facilities to hold large quantities of plantain, they sell mainly to the retailers;

Retailers: They are the middlemen who purchase from the wholesalers and sell direct the Consumers.

Consumers: The consumer is an individual who consumes or uses the plantain purchase from the retailers.

Efficiency of Plantain marketers

The effect of the socio-economic characteristics of plantain marketers on marketing margin shows that several variables entered into the model where statistically significant. With an R_2 of 0.786 and it indicates that 78.6% of the changes in market margin of plantain marketers were determined various variable. The remaining 21.4% were determined by other variables not included in the model. An F-ratio of 14.04 indicates that the overall regression equation is statistically significant effect of socio-economic characteristics on plantain marketing at 1% level.

The following variables entered in the model were statistically significant on their effect on the dependent variable (Plantain market margin) these includes Marketing experience, distance, education, quantity traded and transportation.

Marketing Experience: Marketing experience with a coefficient of 2719.9 and a t-value of 10.45 indicates that it is statistically significant at 1% level. It is also positively related to marketing margin. This therefore implies that and increases in the marketing experience of the plantain marketer; with all things being equal will lead to an increase in the marketing margin.

Distance: Distance with a coefficient of 2.28 and a t-value of 1.74 indicates that it is statistically significant at 10% level. It is positively related to marketing margin.

Education: Education with a coefficient of 707.21 and a t-value of 2.45 is statistical! Significant at 5% level. It is also positively related to marketing margin. This implies that an increase in the educational level of the plantain marketer, with all things bein equal will lead to an increase in the marketing margin.

Quantity Traded: Quantity traded with a coefficient of 538.36 and a t-value of 10.40 is statistically significant at 1% level. It is also positively related to marketing margin. This implies that and increase in the quantity traded t) the plantain marketer 's ill lead to an increase in the marketing margin with all things being equal.

Transportation: Transportation with a coefficient of -0.28 and a t-value of -2.86 is statistically significant at 5% level. However, it is negatively related to the dependent variable (Plantain marketing margin). This implies that as the transportation cost increases, with all things being equal. the marketing margin decreases. A 1% increase in the transportation cost of plantain will lead to a 0.28% decrease in the marketing margin of plantain.

Table 3: Parameter Estimates of Factors influencing Marketing Margin of Plantain Marketing

Explanatory Variables	Unstandardized Coefficient β	Standard Error	Unstandardized coefficient Beta (β)	t-value	Significance
Constant	14610.161	987.216		14.799	0.000***
Experience	2719.958	260.230	0.102	10.452	0.000***
Distance	2.281	1.304	0.173	1.749	0.083*
Gender	224.537	2447.710	0.009	0.092	0.927
Age	170.063	140.775	0.111	1.208	0.230
Education	707.215	288.187	0.229	2.454	0.016**
Household Size	771.429	572.317	0.129	1.348	0.180
Qty Traded	538.364	51.740	0.098	10.406	0.000***
Transportation	-.284	.100	-0.025	-2.869	0.007**

Dependent Variable: Marketing Margin. *, **, and *** mean significant levels at 10%, 5%, and 1%, respectively.

Source: Computed from field data, 2021

Table 3b: Diagnostic Statistics of the Model

Model	R	R-Square	Adjusted Square	R Std Error of the Estimate
1	0.887^2	0.786	0.627	12.95012

a. Predictors: (Constant), transportation cost, Education, Experience, Age, Qty Traded, Gender, Household Size, Distance.

Table 3c: Analysis of Variance (ANOVA)

Model	Sum of Square	Df	Mean Square	F	Sig
Regression	1883307409.406	8	235413426.176	14.037	.002
Residual	18447623683.031	110	167705669.846		
Total	20330931092.437	118			

a. Dependent Variable: Marketing margin

b. Predictors: (Constant), transportation cost, Education, Experience, Age, Qty Traded, Gender, Household Size, Distance.

Profitability of Plantain Marketing

The profitability of plantain marketing in Oshimili South Local Government Area of Delta State was determined by finding out the cost and selling price of bunches of plantain fruit.

The cost and return analysis of one dozen (12) bunches of average sized plantain fruit is presented in the table below.

Table 4: Profitability Analysis of Plantain Marketing

Variables	Amount in Naira (N)	
Revenue from sale of average 12 bunches (Total revenue [TR])	9,362.40	9,362.40
Variable Costs		
I. Cost of Purchase	4,874.50	
II. Transport Cost	520.00	
III.Other Cost	100.00	
Total Variable Cost (TVC)	5,494.50	5,494.50
Gross Margin (GM = TR -TVC)		3,867.90
Return on Investment (ROI) = GM/TC		0.704

Source: Computed from field data, 2021

Table above shows that the average variable cost per dozens of plantain bunches is N5,494.50 and the average total revenue per dozens of plantain bunches is N9,362.40. The Gross Margin is N3,867.90. The return on investment (ROI) is N0.704 showing that for every one naira spent plantain marketers in the study area attract a gain of 70 kobo. It can then be deduced from the above result that plantain marketing is a profitable venture. This is in conformity with the findings of Oluwatomiwa (2008), that plantain is a profitable venture.

Constraints of plantain marketing in the study area.

The constraints militating against plantain marketing in the study area as presented in table below varies from access to credit loans, security, inadequate funds, market accessibility, rapid deterioration in quality/spoilage, seasonal price fluctuation, and high transportation cost. High transportation cost of 37.5% constitutes the major constraint to the respondent and formed one of the highest proportions of the total marketing cost. This is due to the distance traveled to purchase the product from farmers. 15% of the challenges faced by plantain farmers was as a result of rapid deterioration in quality/ spoilage. Another reason might he as a result I the route to the market which accounts for about 13.3% of the constraint. Access to credits accounted for 11.7% of the constraint. Inadequate funds and Seasonal price fluctuation accounted equal percentages of 8.3%. About 5.8% of the respondents accounted security as their challenge in the market.

Table 5: Distribution of Plantain Marketers according by constraints affecting their marketing

Constraints	Frequency	Percentage (%)
Access to credit loans	14	11.7
Security	7	5.8
Inadequate funds	10	8.3
Market Accessibility	16	13.3
Rapid Deterioration in quality/spoilage	18	15
Seasonal price fluctuation	10	8.3
High Transportation Cost	45	37.5
Total.	120	100

CONCLUSION AND RECOMMENDATIONS

The study revealed that plantain is a perfect competitive market, there is no restriction into the business, and is profitable with moderate net income. However, the marketing was faced with a lot of constraints such as high transportation cost, rapid deterioration in quality/spoilage, market accessibility, access to credits, inadequate funds, seasonal price fluctuation and security. Finally, plantain marketing in the study area could be more profitable by finding lasting solutions to the various constraints faced by its marketers.

Based on the research findings, the following are recommended

1. Problem of infrastructural facilities such as bad roads should be addressed by all tiers of government. Bad road should be reconstructed and new ones constructed especially those that link the rural areas with urban areas. This will help in getting the produce to the market places in good quality. It will bring about a reduction in transportation cost and hence the cost of marketing.
2. The marketers should come together to form plantain marketer's cooperative groups from which members could obtain loans at very low interest rates to finance and expand their business.
3. Proper handling during on-loading and/or off-loading as well as good storage facilities will reduce the rapid deterioration in quality and spoilage of the plantain and thereby increasing profit.
4. Development and adoption of better techniques that will simplify plantain processing to reduce the spoilage of overripe plantain and bring about value addition is require

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