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ECONOMIC ANALYSIS OF PLANTAIN MARKETING IN USSA LOCAL GOVERNMENT AREA OF TARABA STATE, NIGERIA

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ABSTRACT
The study analyzed plantain marketing in Ussa Local Government Area of Taraba State, Nigeria. The specific objectives of the study were to determine the performance of plantain marketing, examine the factors influencing gross margin of plantain marketers and identify the constraints associated with plantain marketing in the study area. Data used for the study and were collected from five major markets within the Local Government Area that were purposively selected for the study. Convenience sampling was used in selecting twenty-six plantain marketers in each market for the study and only126 questionnaires were successfully retrieved. The analytical tools used were descriptive statistics, marketing margin, marketing efficiency index and multiple regression analyses. The result of the findings on the performance of plantain marketers indicated a marketing margin of 23% and marketing efficiency of 114% were estimated, an indication of good market performance. The result of the multiple regression analysis revealed that the coefficients of three, age of marketer, cost price and initial capital, out of the six explanatory variables used in the model significantly affect gross margin of the plantain marketers at varying levels of probabilities. The major constraints confronting plantain marketers include lack of access to credit facilities (88.10%), perishability (76.19%), seasonal price fluctuation (67.05%) and poor access road (54.76%). The study recommends that credit facilities should be made accessible to plantain marketers especially from micro-finance banks, as this will go a long way in boosting plantain business in the study area.
Keywords*:* plantain, marketing, performance, constraints, Taraba state, Nigeria

INTRODUCTION
Agriculture is the backbone of most third world countries (i.e developing Nations). Agriculture provides over 80% of total foreign exchange earnings of Nigeria before the oil boom (late 1970s), and has served important and useful purpose in the industrial and economic sector of Nigeria (Adeniyi and Adeyemo, 2014). Agricultural sector is more popular in developing countries like Nigeria because it serves as major derive for national survivor through provision of food and foreign exchange (Ugwu and Kanu, 2012).

Nigeria is one of the largest plantain (*Musaceae paradisiaca*) producing countries in the world; it is ranked fifth largest producers with 3.18 million metric tonnes (MMT) following Ghana (4.87MMT), Democratic Republic of Congo (4.86MMT), Cameroon (4.78MMT) and Uganda (3.42MMT) in the year 2019 (Food and Agriculture Organization Statistics Database, 2021). Plantain is an important starchy fruit crop. Plantain has low saturated sugar (220 calories), sodium content, and minerals that are essential to human being when consumed raw. It is a good source of potassium, magnesium, phosphate, dietary fibre, and vitamins such as vitamin A, B_6 and C that aid vision, good skin and immunity. Due to its high nutrients content, plantain can be used in the treatment of some ailments such as sore throats, tonsillitis, diarrhoea, vomiting, and kwashiorkor. The fresh juice from plantain trunk, fruit stalk and leaves are healing and soothing remedy to burns and anti-bleeding on wounds (Sanni, and Ogbonna, 1991). Apart from its consumption as a staple food; plantain is also used in the food industries for the manufacture of chips, flakes, cakes, thereby creating important job opportunities to the populace directly or indirectly and invariably income for small holder farmers and marketers (Offor, 2020).

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). Plantain marketing involves the

role of middlemen in passing plantain from the farms to the markets. Therefore, the roles of markets cannot be over emphasized because production centres are fragmented and mostly in small scale. It is faced by a lot of marketing problems, and these problems determine whether production can be expanded. Production problems can be overcome by introducing new production technologies and an efficient marketing system, and this can only be realistic by understanding marketing system. Plantain is available for a limited time, and post-harvest losses are high because it is a seasonal crop with relatively short shelf life. The perishable nature of plantain makes its processing a vital link in the marketing process (Adetunji and Adesiyan, 2008; Jatto *et al*., 2020). The main objective of the study is to analyze economic analysis of plantain marketing in Ussa Local Government Area of Taraba State, Nigeria. The specific objectives of the study are to:

i. determine the performance of plantain marketing in the study area;
ii. examine the factors influencing gross margin of plantain marketers in the study area;
iii. identify the problems associated with plantain marketing in the study area.

METHODOLOGY

The Study Area

The study was conducted in Ussa Local Government Area of Taraba State. The Local Government Area lies approximately between latitude $6^0\,43^1\,40^{11}$ North to $7^0\,24^1\,50^{11}$ North and longitude $9^0\,23^1\,37^{11}$ East to $10^0\,10^1\,38^{11}$ East of Equator (Sabo, 2017). The mean annual temperature varies from 26.7^{0}C to 27.8^{0}C**.** The area also has an average annual rainfall of between 1850 mm to 2500 mm. The climate of the study area is marked by dry season between November-March and rainy season between April-October**.** It's bordered to the West by Takum Local Government Area, to the East by Kurmi Local Government Area, to the North by Donga Local Government Area and to the South by the Republic of Cameroon (Figure 1). The Local Government Area has 8 political wards and estimated land area of 1,517.904km^2 with an estimated population of 90,889 based on 2006 census and the present projected population of 2021 is 141,263 at 3.2% growth rate (National Population Commision, 2006). Farming is the major occupation of the people of the area some of the crops produces are groundnut, maize, rice, yam, cassava, sorghum and millet etc. Some of the economic activities in the Local Government Area are; fishing, pottery, cloth weaving etc. The Local Government Area is predominantly inhabited by the Kuteb people. Although other ethnic groups such as Ichen, Tivs, Jukun, Igbo and Fulani are minority tribes in the area.

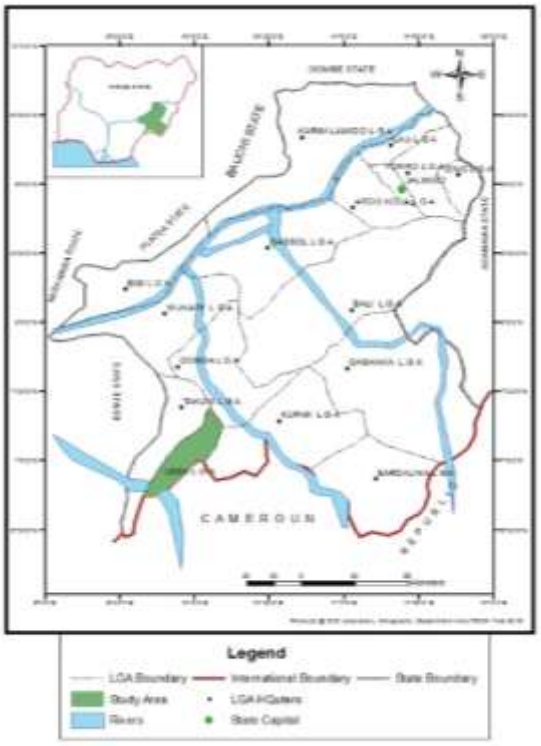

Figure 1: Map of Taraba State Showing the Study Area

Source of Data and Method of Data Collection

The data for this study were obtained mainly from primary sources. This was obtained by the use of structured questionnaire which were administered to plantain marketers in the study area.

Sampling Procedure

Purposive sampling was used in selecting locations with relatively higher concentration of plantain marketers. These locations also involved

the major markets in the area, namely; Kpakia market, Kwesati market, Rufu market, Kpambo market and Pangtso market. Convenience sampling was then used in selecting 26 plantain marketers in each market making a total of 130 plantain marketers for the study since they are dispersed all over the local Government Area. A total of 126 questionnaires were successfully retrieved and consequently used for the study.

Data Analysis

Descriptive statistics such as Means, percentages and frequency tables were employed to identify constraints of plantain marketers in the study area, the performance of plantain in the study area was achieved using two indices, namely; marketing margin and marketing efficiency while multiple regression analysis was used to determine factors influencing marketing margin of the marketers.

Marketing Margin Analysis

Marketing margin has remained an important tool in analyzing the performance of marketing systems. It is the difference between what the consumer pays for the final product and the amount the producer receives. It is expressed as:

MM = CP – RP ……..(1)

Where:

MM = Marketing Margin (₦)

CP = Consumer Price (₦)

RP = Retail Price (₦)

In percentage, it can be expressed as

$$MM = \frac{Selling\ price\ of\ plantain - Buying\ price\ of\ plantain}{Selling\ price\ of\ plantain} \times \frac{100}{1} \text{..(2)}$$

Marketing Efficiency Index

$$ME = \frac{Output\ of\ Marketing\ plantain}{Input\ of\ marketing\ plantain} \times \frac{100}{1} \text{ ..(3)}$$

$$ME = \frac{Total\ Revenue\ of\ plantain}{Total\ Cost\ of\ plantain} \times \frac{100}{1} \text{ …(4)}$$

Where:

ME = Marketing Efficiency

Multiple Regression Analysis

This was used to examine factors influencing marketing margin of the marketers, Economic, econometrics and statistical criteria were used in selecting best functional form among liner, semi log, double log and exponential functions.

It is expressed explicitly as:

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6) + e_i$.....(5)

Y = Gross Margin of plantain marketers (₦)

X_1 = Age of the plantain marketers (years)

X_2 = Educational level of the plantain marketers (measured by number of years spent in school)

X_3 = Cost Price (₦)

X_4 = Selling Price (₦)

X_5 = Initial Capital (₦)

X_6 = Marketing experience (years)

Four functional forms of multiple regression that were tried to select the best fit based on statistical, economic and econometric criteria. The functional forms are: linear function, exponential function, semi-log function and double log function

RESULTS AND DISCUSSION

Performance of Plantain Marketing

The performance of plantain marketing was analyzed under marketing margin and efficiency analyses and are discussed below.

Marketing Margin of Plantain

Marketing margin refers to the difference between the selling and purchase price of plantain. The higher the marketing margin the better the market performance and vice versa. Result from Table 1 shows that the plantain marketers have an average marketing margin of ₦ 83,991.03 an indication of 23% increase above the cost price. This shows that plantain marketing enterprise is profitable in the area and the performance is high.

Table 1. Marketing Margin of Plantain Marketing/Month

Variable	Amount (₦)
Selling Price (SP)	46,540,650
Cost Price (CP)	35,957,780
Marketing Margin (MM)	10,582,870
Average Marketing Margin	83991.03
Marketing Margin (MM)	23%

Source: Field Survey, 2021

Marketing Efficiency

This was used in determining the performance of plantain marketers. It is estimated as;

$ME = \frac{TR}{TC} \times 100$

The total cost (marketing cost) was estimated as the sum total of costs of transportation, handling, market tax, storage and cost of the product. The total cost and total revenue are shown in Table 2 the marketing efficiency value of 114.83% indicates that marketers were able to make profit of about 15%. This therefore indicate that the enterprise is not only profitable but can also be sustainable.

Table 2 Marketing Efficiency Computation

Items	Amount (₦)
Marketing Costs	40,529,510
Total Revenue	46,540,650
ME (%)	114.83%

Source: Field Survey, 2021

Analysis of Factors Influencing Gross Margin of Plantain Marketers

The result of the multiple regression analysis used to examine the factors influencing gross margin of plantain marketers is presented in Table 3. The double logarithm function was chosen as the lead equation based on economic, econometric and statistical criteria. The coefficients of three out of the six explanatory variables used in the model were significant at varying levels of significance and have the expected signs. These variables include; age of the plantain marketers (X_1); cost price (X_3) and initial capital (X_5). The value of the coefficient of determination R^2 of 0.89 indicates that 89% of the variation of gross margin of the plantain marketers is explained by the variables used in the model, an indication that the data have fitted well into the model. The overall model is also significant at 1% level as indicated by the value of the F-statistic.

The age of the plantain marketers (X_1) was statistically significant at 10% level and had a greater influence on the gross margin of plantain marketers. This means that the gross margin of plantain marketer increases with rise in the marketer age. In other words, older plantain marketer tends to have higher gross margin than the younger one.

The cost of the commodity (X_3) is significant at 1% level and inversely related to the gross margin. This implies that increase in gross margin is accompanied by corresponding decrease in the price by the plantain marketers for the commodities. This is in agreement with economic theory. All thing being equal, when cost of plantain sold to plantain marketers decreases and the selling price of the plantain remain unchanged plantain marketers are more likely to make higher profits which in turn increase the gross margin (Andrew, 2018).

The coefficient of initial capital (X_5) is significant at 1% level and positively related to the gross margin. This implies that an increase in initial capital of plantain marketers will lead to an increase in the gross margin. This could be expected because plantain marketers who invest large sum of money are expected to have higher gross margin due to economic of sale in plantain marketing activities.

Table 3. Result of Multiple Regressions Analysis

Variables	Parameters	Coefficients	Standard Errors	T- value	Sign
Constant	β_0	10.488	0.976	10.75***	0.000
Age (X_1)	β_1	0.201	0.119	1.69*	0.094
Education (X_2)	β_2	-0.016	0.027	-0.60	0.551
Cost Price (X_3)	β_3	-2.258	0.161	-14.05***	0.000
Selling Price (X_4)	β_4	0.087	0.159	0.55	0.586
Initial Capital (X_5)	β_5	0.049	0.009	5.23***	0.000
Marketing Experience (X_6)	β_6	-0.048	0.046	-1.03	0.305
R-squared 0.89					
F-statistic 165.64***					

Source: Field Survey, 2021

*** Significant at 1% level * significant at 10% level

Constraints Associated with Plantain Marketers

The major marketing constraints faced by the plantain marketers were lack of access to credit facilities (88.10%), perishability (spoilage) (76.19%), seasonal price fluctuation (67.05%) and poor access road (54.76%). In addition, high transportation cost, low price of the commodity, high marketing commission and inadequate market information were not left out as challenges facing plantain marketers in the area as presented in Table 4. It indicates that most of the marketers were face with one problems or the other as it has been ranked in order of their severity.

Table 4 Constraints in Plantain Marketing in the Study Area (n = 126)

Constraints	Frequency	Percentage (%)	Rank
Seasonal Price Fluctuation	87	67.05	3
Lack of Access to Credit Facilities	111	88.10	1
High Transportation Cost	63	50	5
Perishability (spoilage)	96	76.19	2
Inadequate Market Information	42	33.33	8
Poor Access Road	69	54.76	4
Low Price of the Commodity	60	47.62	6
High Marketing Commission	56	44.44	7

Source: Field Survey, 2021, *Multiple Response

CONCLUSION AND RECOMMENDATIONS

The finding from the study showed plantain marketing was profitable business in Ussa Local Government Area of Taraba state. The result show that females dominated the industry. However, the business is bedeviled by constraints, predominantly lack of access to credit facilities, perishability (spoilage), seasonal price fluctuation and poor access road. Based on the finding of this study, the following recommendation were made:

i. Credit facilities should be made accessible to plantain marketers especially from micro-finance banks, as this will go a long in boosting plantain business in the study area.
ii. The plantain marketers should be encouraged to form cooperative societies in order to enable them enjoy bulk purchase and sale to minimize their cost and maximize profit.

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