Economics of Yam (*Dioscoreaceae Dioscorea)* Marketing: New Insights from Bosso Local Government Area of Niger State, Nigeria.

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Abstract

This current study examines the economics of yam marketing in Bosso local government area of Niger State Nigeria, to this end, statistical tools such as descriptive statistics, marketing margin model, and regression analysis procedures was utilized as estimation techniques. The study relies on random sampling technique of selected 80 yam marketers. The motivation for this study, rest on the dominance of yam marketing operation in the study area as well as the need to chart a better and more efficient system of agricultural marketing for yam marketers in the sampled area. The empirical result reveals that an overwhelming majority (95.1%) of the marketers were 21-50 years of age with 6 years and above of marketing experience dominating (90%). However, most of the yam marketers started the business with capital base of ₦1,000-₦20,000, it was also discovered was that majority (58.8%) of the marketers were female and within their active age with mean age of 35 years which goes to show that female can contribute to the responsibility of the family. The study also seeks to explore marketer's preference for source of funding either from the formal institutions such as (Banks and Co-operatives) or the informal institutions (from friends or relatives) which is key in the effective and efficient in yam

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marketing. Finally, the study is set out to find out potential constraints to the attainment of the full gains of yam marketing in the study area and offer workable and visible remedy.

Key words: Yam marketing, Ordinary Least squares, Bosso Nigeria**.**

1. Introduction

Yam belong to the family Dioscoreaceae and to the genus Dioscorea which include about 600 species but only 12 species are of economic significance (Coursey, 1967; Ozo *et al.,* 1984). Two species namely D. *rotundata* and *D. alata* grown mainly in Africa and Asia make up about 90% of the world production of yam for consumption. Yam is the preferred food in Tropical Africa, the Caribbean, and Oceania and to a small extent in South-East Asia (Abraham, 1989). Average yam consumption per capital per day is highest in Benin (364 kcal), Cote d'Ivoire (342 kcal), Ghana (296 kcal) and Nigeria (258 kcal). (IITA,2007).

Humanity desires generally over years has not changed, It still anchored on the three basic needs of life namely; food, clothing and shelter (Agboola & Balcilar, 2012). The provision of food in adequate quantity and quality to everyone goes beyond meeting an obligation to our fellow human beings; it is a contribution to development that can bestow benefits on all (Izuchukwu, 2011; Sertoglu et al., 2017). Recent data shows that, Nigeria among its global competitors ranks as top producer of yam with a total annual output of 31.5 million metric tons (CBN, 2003).Yam activities in Nigeria offer greater producer surplus for farmers and even more economic surplus through the marketing chain[2]. Generally speaking, marketing chain which imposes a major constrain on the supply as well as the demand price has strong impact on food availability; unfortunately the growth in yam marketing activities has not matched the growing

[2] For interested readers on the economic importance of efficient yam marketing see J. O. Olukosi; S.U.Isitor and O. O. Moses (2008) *Agricultural Marketing and prices* (principles and Applications) 3rd edition, Living books series, GU publications, Abuja, FCT pp 141

demand, this has led to Nigeria in recent times experiencing marketing shortage and the few available have become more expensive.

However, yam tuber like other root crops is essentially a starchy or carbohydrate food. It has a principal nutritional function being a source of supply of calories to the body. Today, the total contribution of yam towards feeding the people of West Africa is less than other staples such as cassava, maize and rice, but the food value of yam is still an important one. The yam crop produces some 18 million tones for the people of the "yam zone" in the tropical region of West Africa. (Wilkin,2001; Ikeh et al.,2013). More so, in addition to its nutritional relevance, yam plays an important role in social and religious festivals. In yam growing areas of West Africa, yam is a vital integral part of the cultural heritage for many people.

In the agricultural economics/marketing literature its well establishes that production is meant to create utility for consumers and this is done when what is produced gets to the consumers. It now becomes necessary to identify the sources of the product and the relative importance of the channels through which consumer's satisfaction is met. It's against the aforementioned, that this study seeks to answer the following pertinent salient questions:

1. What are the basic demographic features of yam marketers in Bosso Local Government Area?

2. How best can we describe the supply channels for yam in this area?

3. Based on observed data of our survey, on an average, what is the price margin for yam marketer in this area?

4. What are the constrains for yam marketers in the study area?

Marketing is not just a subject of interest to agricultural economist alone but also to society who will prefer moderate increase in food price or no increase at all (Ehirim et al.,2007). It is

therefore of paramount importance to determine the appropriate marketing system for agricultural products among which yam is prominent in Bosso Local Government Area of Niger State, Nigeria.

The remainder of this paper follows thus: The next section provides the material and methods (methodology) and subsequently empirical results and discussion and finally ends with concluding remarks and recommendations.

2. Methodology and Data Source

The current study was conducted in Bosso local government area of Niger State, Nigeria. It has a population of 147, 359 (NPC, 2006). It has a low land type of landscape. A total sample size of 80 respondents was selected comprising of two categories namely: wholesalers and retailers in the marketing of yam. Four (4) markets from the local government area namely Garatu, Maikunkele, Beji and Gwadabe markets were purposively selected for the study because of their prominence in yam marketing. In each market 20 respondents comprising both wholesalers and retailers were randomly chosen, giving a total sample size of 80.

A questionnaire designed in accordance with the objectives of the study was administered with the help of trained enumerators in each of the locations to both wholesalers and retailers in order to gather the necessary information on various aspects of marketing of yam in the study area. Data on the socio-economic characteristics of the respondents, quantity and prices of yam purchased and sold by wholesalers and retailers as well as storage and transportation costs were collected.

A simple Ordinary Least Square (OLS) regression was employed, using information from the sample data to estimate the significance of selected variables on marketing margin, the

dependent variable used to account for the variation in price is marketing margin under this study.

3. Model Specification

Marketing margin as defined under this study, in accordance with Olukosi et al., (2007), can be expressed with the formulation below;

$$Marketting\ margin\ = \frac{prie - marginal\ cost}{price} \times 100$$

Modeling the determinants of marketing margin under this scenario requires that we include as much as possible the observable explanatory variables (X_i). Therefore, the functional form of this relationship between marketing margin and our observed independent variable follows:

$$Y=f\ (X_i\ ,D_i).$$

Where, X_i denotes the collected information of the observed independent variables namely: Age of respondent ,educational attainment ,household Size: and D_i represent the binary operator for gender of respondent (1=male, 0=female), marital status (1=married, 0=otherwise), occupation (1=yam selling as major occupation, 0=otherwise), scale of yam production (1= retailer.0 otherwise).

The econometric form is expressed below

$$Log\ Y= \alpha+\beta_i log(X_i)+\delta i log(D_i)+\varepsilon.$$

H_O: There is no significant relationship between some selected socio-economic characteristics of the marketers and their level of marketing margin.

4. Results and discussion

The demographic distribution of the social economics characteristics of the respondents according to gender, age, educational attainment, marital status, numbers of years of experience and household size.

Table 1: Demographic Feature of Respondents

	Frequency	Percentage distribution
Sex:		
Male	33	41.2
Female	47	58.8
Total	**100**	**100**
Age		
21-30 years	42	52.5
31-40 years	25	31.3
41-50 years	9	11.3
51- 60years	4	5.0
Total [mean age = 35]	**80**	**100**
Education level		
No education	36	45.0
Primary education	18	22.5
Secondary education	21	26.3
Quranic education	1	1.3
Adult education	4	5
Total	**80**	**100**
Years of experience		
1-5	**8**	10.0
6-10	**11**	13.8
11-15	**19**	23.8
16-20	**28**	35.0
20 years above	**14**	17.5
Total [mean =32]	**80**	**100**
Marital Status		
Single	15	18.8
Married	61	76.3
Divorce	3	3.8
Window	1	1.3
Total	**80**	**100**
Income Level(₦)		
1-20000	2	2.5
20001-40000	38	47.5
40001-60000	32	40.0
60001-80000	8	10.0
Total	**80**	**100**

Source: Authors Computation based on field survey

5. Marketing Channel

Marketing channel this is the route (path) through which commodity or products passes till its gets to the end user (consumer).

Fig 1: Marketing channel for yam in Bosso Local Government Area.

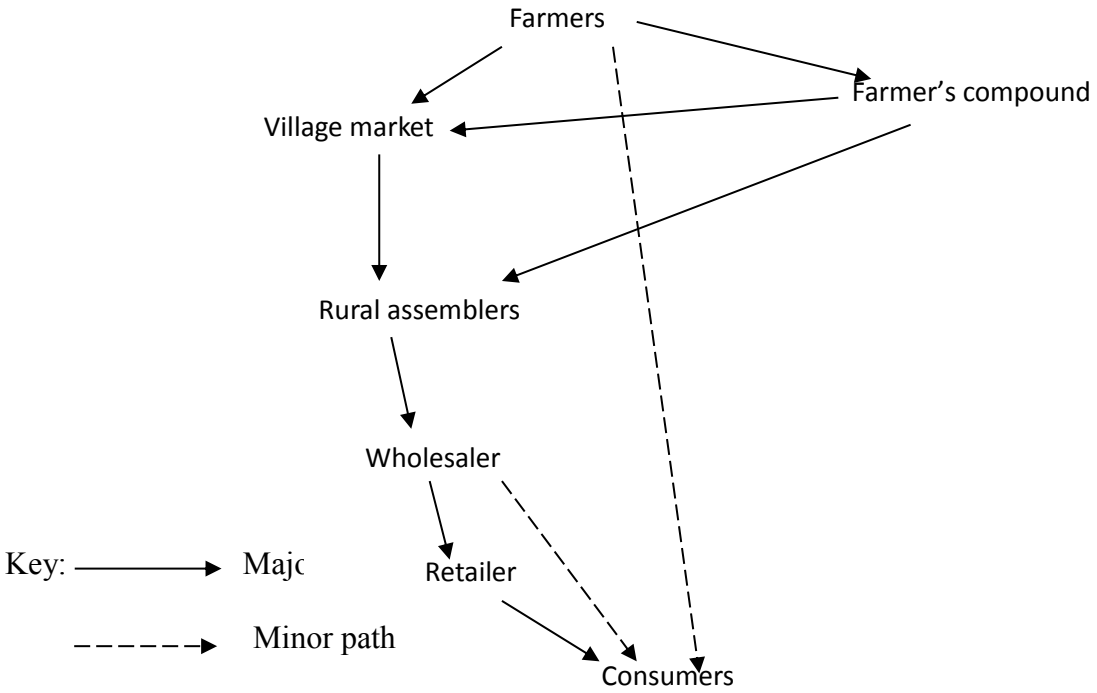

Fig 1: Above reveals that apart from th e of yam from farmers to village market or the farmers compound, other interaction do exist where the wholesalers and retailers form an important group of intermediaries handling where wholesalers and retailers directly buy from the farmers of less importance is buying of yams by consumers directly from the farmer and wholesaler. From assembler, also the handling of yams by retailer directly from assemblers is important of yam in the study area.

Table 2: The Regression Analysis

Explanatory variable	Co efficient
Constant	12.1345*** (18.62)
Age	-0.4398*** (-2.87)
Educational attainment	-0.1728* (-1.79)
Household size	0.1843*** (2.78)
Gender	0.0119 (0.11)
Marital status	-0.4204** (-2.11)
Occupation	0.2163* (1.96)
Quantity of yam handled	0.0219 (0.52)
R^2	0.6355
Adjusted R^2	0.6709
F-Statistic	3.16***

Note: Results shown in parentheses are absolute value of the t-statistics * **,** and * implying rejection of the null at 1%,5% and 10% level of significant level respectively. The regression was carried by STATA software.

Double log was chosen as the leading equation on the basis of coefficient of determination (R^2) value, T- value- as well as the signs on estimated parameters. The result gave an R^2 of 0.635%. This implies that 63.5% of variation in marketing margin of yam production was explained by the variables included in the model while 36.5% are left unexplained by the choice model. However, the model depicts high explanatory power of the variation in marketing margin as explained by the explanatory variables.

The co-efficient of age and household were significant at($P< 0.01$),Educational attainment and occupation were significant at($P< 0.10$) also marital status was significant at ($P<0.05$) while the co-efficient of sex, and quantity of yam handled were positive but not significant indicating these variable do not contributes to marketing margin of the farmers. The

F-statistics was statistically significant at (P<0.01) which indicates the joint significant of all variables in the model as well as robustness of our model that is, the independent variable adequately explained the dependent variable. The co-efficient with positive signs indicates that an increase in the level of these variables would leads to an increase in marketing margin of the respondent *ceteris paribus*. The co-efficient age, marital status and educational level had negative sign implied that an increase in this inputs would lead to a decrease in the level of marketing margin. This implies that large family size contributes to marketing margin and also a good pay job (occupation) alongside with yam marketing will have a significant increase in the marketing margin.

Table 3: Distribution of Respondents According to Problem Faced in Yam Marketing

Problem	Frequency	Percentage (%)
Transportation problem	47	58.8
High rate of spoilage	38	47.5
High fuel cost	21	26.3
High storage cost	39	48.8
Lack of constant supply of yam	12	15.0
Low channel	43	53.8
Theft	69	86.8
Lack of space for storage	28	35.0
Total	**297***	**372***

Source: Authors Computation based on field survey while * *denotes multiple response.*

The result reveals that theft (86.8%) was the most the most serious problem encounter by farmers in the study area. This problem therefore ranked first among the problems of yam marketing, this goes to show that theft is a major constrain that hampers full attainment of yam marketing in the study area and the implication of this, is that this could discourage young and aspiring marketers that will want to venture into the business in the study area, this could be cub

with adequate and affordable security personnel stationed in the various markets, Transportation ranked second to theft as a major restrain to yam marketing and the implication of this is that the yam might not get to the end user as at when due which is one of the utility of production, closely followed is low channel which could lead to an increase in the margin of yam, and in the long run lead to low patronage because consumer will obey the law of demand which state that the lower the price the higher the demand *ceteris paribus,* while high rate of spoilage accounted for (47.5%) ranking 5th in the constrains of yam marketing and this can discourage the involvement in the participation in yam marketing.

6. Concluding remarks and recommendations

An attempt to investigate the marketing system of yam in Bosso local government area of Niger state, Nigeria was the principal focus of this paper. The study explores the activities of the traders in the marketing of yam in the chosen area of study. To this end, the study sampled 80 respondents in two strata with 4 chosen markets. The estimation techniques employed in this research paper are ordinary least square (OLS) descriptive statistics; marketing margin model. The study's simulations reveals that female were more involved in marketing activities accounting for (58.8%) while 41.2% were male, this goes to show that women involved in yam marketing can have income to support their husband in the family responsibility, the study also showed that (52.5%) of the respondents were within the age group of 21-30 years and were in their active age not left out (45.0%) of the respondent had no formal education while 53.8% of the trader had formal education depicting a reasonable level of literacy among the traders. Majority of the traders had enough capital (income) above ₦20, 000, these findings resonates with works of (Aidoo et al.,2012) in Ghana. This implies that ₦20, 000 is reasonable enough to start the marketing of yam in the study area. Finally, the study revealed fairly high and positive

margins in yam marketing activities in Bosso local government Area, suggesting that marketing of yam in the study area is a profitable venture if the bottle neck associate with marketing of yam in the study area is adequately addressed. This means improvements in the marketing functions performed could enhanced improvement in the income levels of the market participants (traders).

7. Recommendations

The marketing problems that exist in Bosso local government area of Niger State Nigeria, as revealed by the study conducted in the area shows the existence of imperfection in the marketing system of yam. These imperfections have been known to be the main factors responsible for ineffective marketing of yam in the research area. To reduce or completely eradicate problems associated with yam marketing in the study area, the following recommendations were proposed namely: Provision of transportation facilities**,** Provision of credit facilities with little interest rate Provision of storage facilities, and Provision of effective information dissemination process.

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