DETERMINANTS OF MARKETING EFFICIENCY FOR SWEETPOTATO IN NASARAWA STATE AND FEDERAL CAPITAL TERRITORY, ABUJA, NIGERIA

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ABSTRACT
The study was conducted to assess the determinants of sweet potato marketing efficiency in Nasarawa State and FCT. Multistage sampling method was used for the study. One hundred and twenty sweetpotato marketers were randomly selected from the eight markets of Nasarawa State and FCT. Structured questionnaire and interview schedule were used to elicit information from the respondents. Descriptive statistics and multiple regression model were used in analyzing data. The result revealed that the study area was dominated by male sweetpotato marketers. The result of the multiple regression model show that coefficients of full time sweet potato traders (X_1) was positive and significant ($p<0.01$), Gender (X_2) was positive and significant ($p<0.05$), Level of education (X_3) was negative and significant ($p<0.05$), coefficient of age (X_5) was positive and significant ($p<0.10$), coefficient of experience (X_7) was positive and significant ($p<0.10$). Marketers are advised to attend trainings organized by NGOs and institutions that will link them up to supply or bulking areas leading to increased selling price and market access. These results led to policy implications of the study for improved efficiency of the traders for increased income, food security and employment in the study area.

Keywords : Marketing , Sweet potato and Efficiency

INTRODUCTION
Sweet potato (Ipomea Batatas) has tremendous potentials to be an efficient and economic source of energy within Sub Saharan Africa. It is the third most important root and tuber crop after cassava (Manihot Esculenta) and yam (Dioscorea specie). Both root and leaves are good source of pro vitamin A, vitamin B, vitamin C, Calcium, Iron, Potassium and sodium with a small amount of protein in both root and leaves (Woolfe,1992). Sweet potatoes are extremely adaptable to adverse environmental conditions; they can help increase food security in times of drought and famine, particularly in post-conflict areas for displaced persons. (Andrade et al., 2009). Sweet potatoes produce carbohydrates much faster and require less labor than other crops. Sweet potatoes are used to restore access to food for resetting populations and alleviate future agro-climatic or political shocks. The challenge with using sweet potatoes in emergency response situations is the crop's low multiplication rate. Vine material needs to be ready to go and mechanisms in place to distribute vine materials to needy farmers. (Andrade et al., 2009). Despite the importance of sweet potato, as stated above, it is considered a minor crop in terms of production and consumption in Nigeria. Of the estimated 200,000 million tones of all root and tubers produced in Nigeria annually, from 2003 to 2005 sweet potato contributed only 0.13% (Horton, 2008). In addition to the little emphasis placed on the crop, average yield under local conditions in the country is four tones. This is extremely low when compared to other countries such as China were as much as 12 tonnes per hectare have been obtained through the use of similar labour intensive and modern technology system (Woolfe, 2002).

Agricultural commodity marketing systems in Nigeria have been the subject of criticism for a long time. The systems have been described variously as inefficient, unresponsive to changes and exploitative of the rural farmers. In view of the observed imperfections, government has constantly instituted changes in marketing system.(Uchendu and Oringa, 2014). Marketing in developing countries such as Nigeria is beset with a lot of problems, which constitute a bottleneck to the flow of goods and services. Such problems include seasonal variations, transportation of harvested produce, storage, processing, grading and communication (Ikechi et al., 2006). These problems notwithstanding, sweet potato production has been found to be profitable (Ogbonna et al., 2007).

Considering the increases experienced in sweet potato production and the inability of the increases to be absorbed in the marketing system as stated earlier, Low *et al.* (2009) attributed the inefficiencies in the marketing system of sweet potato to inadequacies of storage, processing, transportation and perishability. According to Onabanjo (2008) lack of good processing technology is one of the greatest problems militating against efficient sweet potato marketing system. This is due to lack of diversification of the uses. On the basis of these problems, a variety of policy recommendations were made by Tewe *et al.*, (2003). Notable among these were, provision of adequate storage, processing, marketing and transportation facilities. The question to be addressed is how efficient is the sweet potato marketing system or how well is the sweet potato marketing system performing?. According to Arene (1999) efficiency is used to evaluate marketing performance. Therefore, there is the need to determine the efficiency of the sweet potato marketing system in Nasarawa state and FCT.

METHODOLOGY

The study was purposively carried out in Federal Capital Territory and Nasarawa State, which is noted for marketing of sweet potato roots and its products. A multistage sampling method was used in selecting markets and respondents. In the first stage, two states namely Nasarawa state and Federal capital Territory were selected randomly out of the six states of north central Nigeria. In the second stage, two local government areas were chosen from each state namely Karu and Keffi for Nasarawa state, Abuja Municipal Area Council and Bwari Area Council for Federal Capital Territory making a total of four LGAs. Four community markets were drawn in each of the selected state namely orange, Masaka, Keffi, and Sabon gida (Nasarawa State). Karimo, Karshi, Dei-Dei and Dutse for Federal Capital Territory (FCT). Fifteen marketers were randomly chosen from each of the eight markets drawn, making a total of 120 respondents (marketers).Data were collected by the help of structured questionnaire and interview schedule. Analyses of data were done using descriptive statistics such as percentages, frequencies, and tables. The factors that influenced the marketing efficiency of sweet potato traders in the study area were determined using the estimated ordinary least square (OLS) multiple regression model expressed in its implicit form as follows:

$Y= f (X_1,X_2,X_3,X_4,X_5,X_6,X_7,X_8,X_9.X_0,ei)$……………………………………………(1)

Where: Y = Marketing Efficiency (%),
X_1 = occupational Status (dummy variable; 1=full time trader, 0=part time trader)
X_2 = Gender (dummy variable; 1=male, 0=female)
X_3 = Marital status (dummy variable; 1=married, 0=otherwise)
X_4 = Level of Education (yrs)
X_5 = Age (years)
X_6 = Household Size
X_7 = Marketing Experience (years),
X_8 = Quantity sold (kg)

X_9 = Cost of bag (N)
X_0 = Constant, ei = error term.

Four functional forms of the multiple regression model viz; linear, Exponential, cobb douglas and semi-log functional forms were fitted to the data. The best-fit regression form was chosen as the lead equation based on the econometric criteria such as high coefficient of multiple determination R^2, level of significance of the overall equation (F-statistics), number of variables that were significant and sign of each coefficient relative to a prior expectations of the OLS multiple regression model.

RESULTS AND DISCUSSION

Socio-economic characteristics of the marketers in the study area

Table 1 shows the socio-economic characteristics of the marketers in the study area. The table shows that female sweet potato marketers constituted 35% while males are 65 percent. This implies that males dominate in sweet potato marketing than females in the study area.

Table 1: Distribution of Respondents on Socio-economic Characteristics of Sweet potato marketers

Variable	Frequency	Percentage
Gender		
Female	42	35
Male	78	65
Total	120	100
Age		
11-20	3	2.5
21-30	20	16.7
31- 40	64	53.3
41- 50	30	25
>51	3	2.5
Total	120	100
Marital status		
Married	110	91.7
Single	10	8.3
Total	120	100
Level of Education		
No education	37	30.8
Adult education	4	3.3
Primary education	42	35.0
Quaranic education	10	8.3
Secondary education	24	20
Tetiary education	3	2.5
Total	120	100
Trading Experience		
< 10	60	50
11-20	40	33.3
21-30	15	12.5
31-40	5	4.2
Total	120	100
Traders Association		
No	75	62.5
Yes	45	37.5
Total	120	100

Source: Field Survey, 2013.

The table further revealed that majority (78.33%) of the marketers were within the age range of 31-50 years while (2.5%) of the marketers are above 51 years, the same applies to marketers that are less than 20 years. This implies that the marketers are still in their productive age. It is expected that respondents in these age range can take risks and initiatives which are expected in this type of marketing activities because they have more strength to move from one location to the other. Moreover, majority (91.67%) of the marketers are married and most (30.83%) of the marketers are not educated while others have one form of education or the other. The table shows that about 50% of the marketers have less than 10 years experience in sweet potato marketing while those that had between 31-40 years experience accounted for (4.2%). A similar study by Okereke and Anthonio (1988) established a significant relationship between marketing experience and volume of sales in the wholesale and retail trades. The table also revealed that 37.5% belong to sweet potato traders association, while 62.5% do not. Prices for the crop most times are not determined by any association. According to Anuebunwa (2008), membership in traders association offers opportunity for the creation of implicit barriers to entry and exit into the trade. This influences the nature of the market. Nevertheless, the traders have information on the marketing of the crop as sweetpotatoes are uniformly bulked for sale in the market.

Table 2 shows the estimated regression result of factors influencing marketing efficiency of sweetpotato traders in the study area. The exponential functional form was chosen as the lead equation. The coefficient of multiple determination for traders (R^2= 0.5328) was significant at the $F_{0.01}$ level. This implies that 53.28% of the variation in marketing efficiency of the traders was explained by the marketing variables investigated in the study. The coefficient of occupational status (X_1) was positive and significant at $t_{0.10}$ level for the marketers. This implies that full time sweet potato traders are more efficient than part time traders because they are more committed on the job and put in their best in the marketing of sweet potato in the study area. The coefficient of Gender (X_2) was positive and significant at $t_{0.05}$ level, implying that male sweetpotato marketers are more efficient than their female counterparts. Generally, men and women are inherently different because of differences in socialization, training and experience encountered prior to entry into a particular work positions (Tiri et al,. 2014 and Muktar,2002). The coefficient of level of education (X_4) was negative and significant at $t_{0.05}$ level, which implies that any increase in level of education will lead to a corresponding decrease in marketing efficiency of sweet potato marketers. Most traders that are more educated take sweet potato marketing as a part time occupation because they are engaged in other livelihood activities; they might not be as efficient as the full time marketers. The coefficient of age (X_5) was positive and significant $t_{0.10}$ level which implies that any increase in age will lead to increase in marketing efficiency. This is in agreement with a prior expectation and the earlier study on efficiency of marketing of sweet potato by Anyaegbunam and Nwosu (2012) who noted that the older marketers are more discrete in decision, more credible and may bargain better than the younger counterparts. The coefficient of experience (X_7) was positive and significant at $t_{0.10}$ level which implies that increase in marketing experience will increase market efficiency.

Table 2: Regression Estimate of the Determinants of Marketing Efficiency of Sweet potato Traders in FCT and Nasarawa State

Variables	Linear function	+ Exponential function	Cobb Douglas function	Semi-log function
Full Time trader (X_1)	7.781	.376	.415	9.188
	(1.31)	(1.71)*	(1.85)*	(1.52)
Gender (X2)	10.586	.581	.589	11.617
	(2.28)*	(3.37)**	(3.43)**	(2.50)**
Marital status (X3)	-10.506	-.294	-.286	-9.604
	(-1.14)	(0.85)	(0.80)	(0.99)
Level of Education (X4)	-.316	-.145	-.149	-.718
	(-0.13)	(3.05)**	(1.68)*	(-0.30)
Age (X5)	-676	.0265	.812	21.03
	(1.77)*	(1.87)*	(1.47)	(1.41)
Household size (X6)	-1.166	-.032	-.308	-12.884
	(-2.00)*	(1.49)	(-1.42)	(-2.19)*
Experience (X7)	.894	.024	.437	14.620
	(2.94)***	(2.13)*	(2.12)*	(2.62)**
Sold bag (X8)	-.014	-.0004	-.591	-20.090
	(-1.46)	(-1.11)	(-0.69)	(-0.86)
Cost bag (X9)	.012	.0002	.183	9.790
	(1.03)	(0.57)	(0.24)	(0.48)
Constant	6.511	2.023	2.336	16.332
	(0.41)	(3.45)	(0.88)	(0.23)
R^2	0.2660	0.5328	0.4099	0.2328
Adjusted	0.2042	0.4767	0.3524	0.1689
F- Ratio	4.31***	5.93***	5.39***	3.64***

Source: Field Survey, 2013.

***,**,* significant at 1%, 5% and 10%, respectively.

Figures in parentheses are the t-ratios.

CONCLUSION

Determinants of sweet potato efficiency in the study area were analyzed. The coefficients of full time traders, gender, age and marketing experience were positive and significant as well as level of education which was negative. The results call for policies aimed at encouraging full-time sweetpoato marketers who are experienced to increase the level quantity of product sold to enjoy the economics of scale from turnover. These will lead to incresed efficiency of the traders.

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