Original Article | Open Access

Gani et al., 2020. 22(1): 17-22. J. Environ. Agric. Sci. (ISSN: 2313-8629)

Economics of Sweet Potato Marketing in Zing Local Government Area of Taraba State, Nigeria

B.S. Gani[1], D.T. Rukwe[2], Y.J. Elizabeth[2]

Edited by:
Abdul Rauf Kashif,
Institute of Southern Punjab, Multan, Pakistan

Reviewed by:
Shoaib Akhtar ,
University of Punjab, Lahore, Pakistan
Umar Ijaz Ahmed,
Muhammad Nawaz Sharif University of Agriculture, Multan, Pakistan

Received
December 24, 2019
Accepted
February 20, 2020
Published Online
March 28, 2020

Abstract: This study was conducted on economics of sweet potato marketing in Zing Local Government Area, Taraba State, Nigeria. The specific objectives were to: identify the socio economic characteristics of sweet potato marketers in the study area, estimate the marketing margin and marketing efficiency of sweet potato marketing in the study area and identify the constraints faced by the traders in marketing the crop. Data for this study were collected using structured questionnaire. Purposive and simple random sampling techniques were used to select respondents for the study. The data collected were analysed using descriptive and gross margin analysis. The socio-economic characteristics result showed that about 77.6% of the sweet potato marketers were male, 91.8% of the respondents were young people whose ages ranged between 28 to 57 years with 63.3% married marketers. The result revealed that 83.7% of the sweet potato marketers had formal education, 83.7% marketers did not belong to any cooperative organization, 79.59 % of marketers had no access to credit to finance their sweet potato marketing activities and 42.9% had 6-10 years' experience in sweet potato trading. The result shows that the gross marketing margin and net marketing margin were ₦6921.28 and ₦6571.28 respectively with marketing efficiency of 0.59 kobo. The result reveals that, inadequate capital, low profit, inadequate and poor storage facilities, price fluctuation and lack of standard measures were some of the problems identified as problems militating against Sweet Potato marketing in the study area. Sweet potato marketing is a profitable business with attractive net return and investment in Zing LGA of Taraba State. It was recommended that government as well as non-governmental agencies should empower the marketers through the provision of micro credit facilities and modern storage facilities to encourage more people to go into sweet potato marketing.

Keywords: Crop, agricultural marketing, market integration, marketers, Africa, developing countries.
***Corresponding author:** D.T. Rukwe, rukwedaniel@gmail.com

Cite this article as: Gani, B.S., D.T. Rukwe and Y.J. Elizabeth. 2020. **Economics of sweet potato marketing in Zing local government area of Taraba state, Nigeria.** Journal of Environmental & Agricultural Sciences. 22(1):17-22.

1. Introduction

Nigeria is an essentially agricultural country where about 80% of the population lives in rural areas. This population basically practices subsistence agriculture using traditional system of farming. Among the main staple food crops cultivated are tubers and roots like yam, cassava, sweet potato etc. In order to encourage the production of these crops and improve their contribution to the people's livelihood and food security, Nigeria government, through its policy of diversification of agricultural production and fight against poverty. Sweet potato can adapt to different ecological conditions and requires few inputs for its cultivation (Egbe et al., 2012). It is an important food and vegetable crop in most developing countries where it was ranked fifth economically after rice, wheat, maize and cassava (Tottappily and Loebenstein, 2009). Sweet potato is grown mainly for the fresh market. The fresh market sweet potato tubers are sold in the surrounding markets around the study areas, which need to be improved upon for high price and subsequent high income (Vincent et al., 2018).

Sweet potatoes offer important potential for increasing food production and income in Nigeria. It has a high yield potential that may be realized within

[1]Department of Agricultural Economics and Extension, Taraba State University, Jalingo, Nigeria
[2]National Agricultural Extension and Research Liaison Services, Ahmadu Bello University Zaria, Nigeria

a relatively short growing season and adaptability to a wide ecological range of 0 to 2000 m above sea level (Ahmad et al., 2014). Sweet potato is consumed without much processing in most parts of the tropics. It is either eaten boiled, roasted or fried. The roots can also be slightly fermented in water for 2-3 days to reduce the sweetness, then sun dried and milled, mixed with either yam or cassava flour for human consumption. The leaves and tender shoots of sweet potato are used as vegetables. The leaf contains, on dry matter basis, about 8% starch, 4% sugar, 27% protein and vitamins, and therefore are very nutritious. It also contains about 56 mg carotene per 100gm dry matter. The leaves are usually eaten boiled or incorporated into soup and stew (Mathew and Fatinola, 2008).

Industrially, sweet potato flour can be used to substitute wheat in bread making or marine flour in balanced feeds. Baby foods have been formulated using sweet potato while some bakeries blend 15-30% of sweet potato flour for making bread and 20-30% for pastries. It is also used in the brewing of alcoholic drinks and as sweeteners in non-alcoholic drinks (Ohajianya et al., 2014). In spite of these important aspects, less research has been done on sweet potato than on the other root crops. All these features indicate that sweet potato is an important crop capable of playing a significant role in food security. In spite of these assets, sweet potato still remains a marginal crop in the agriculture development programs of Nigeria. It has been basically due to a certain number of factors such as pathogens, weevils (*Cylas spp*.), sweet potato virus disease, low market value tubers harvested by farmers, lack of certified planting materials resistant to abiotic and biotic elements and modern storage facilities for long-term conservation (Vincent et al., 2018).

Sweet potato is seasonal and does not store for a long time. Poor storability of sweet potato is mainly due to sprouting, dehydration and attack by pathogenic organism (Ukpabi, 2004). These storage problems among others have led to damages by marketers in the course of performing their marketing functions. In most cases, poor storability and seasonality lead to market variation in quantity and quality of roots and its associated price swing (Low et al., 2009). The rising consumer price for sweet potato may be an indication of market inefficiency. Marketing in developing countries like Nigeria is affected with a lot of problems, which constitute a traffic jam 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). More importantly, adequate attention has not been paid to the marketing aspects of potato with a view to updating knowledge and hence increases understanding of the marketing efficiency of this crop in the study area in particular and Taraba State in general. In this regard, this present study is an attempt toward analyzing the economics of marketing of Sweet potato in Zing Local Government Area, Taraba State.

The general objective of this study was to carry out economics of sweet potato marketing in Zing Local Government Area, Taraba State, Nigeria. Moreover, to identify the socioeconomic characteristics and constraints in the marketing of sweet potato market in the study area, and to estimate marketing margin and efficiency of sweet potato crop.

2. Materials and Methods

2.1. The Study area

Zing Local Government Area is one of the 16 LGAs in Taraba State. It is bounded by Yorro LGA in the south, in the North-East and West respectively by Adamawa State. The area lies between longitude 10° and 11°E and latitude 9° and 10°N of the equator with an estimated population of about 115,384 (NPC, 2006). The area falls within the transitional belt of savanna in north eastern Nigeria. It has good climatic conditions and rich in agricultural opportunities with the temperature ranging from 28 to 34°C, the mean annual rainfall of the area is 1500 mm. Fertile soil and good climate favors the crop growth. Vegetable of the area also provide good pasture for rearing of animal. The study area is endowed with abundant natural resources including, streams, natural grassland and economic trees.

2.2. Data Collection

The data for this study were collected from both primary and secondary sources. The primary data were collected using structured questionnaire while secondary data were obtained from textbooks journals seminar conference proceedings and internet.

2.3. Sampling Procedure and Sample Size

Sweet potato marketers constituted the population or sampling frame from where a sample was drawn. Purposive and simple random sampling techniques were employed to select respondents. In the first stage, two (2) markets commonly known for sweet potato marketing were purposively selected from the LGA. Secondly, a list of sweet potato marketers in each

market was obtained. Finally 50 sweet potato marketers were randomly selected in a ratio proportional to the size of the population of sweet potato marketers in those markets.

2.4. Method of Data Analysis

Descriptive statistics such as frequency, percentage and mean were used to analyze objectives i and iii of the study and Gross margin was employed to address objective ii.

2.5. Gross marketing margin

The gross marketing margin is the difference between gross marketing income and the total variable cost of marketing. It was used to estimate the profitability level of sweet potato marketing in the area while the net marketing income is the difference between the gross margin and the total cost of marketing less the sum of fixed variable cost. The gross margin model states as follows:

GMM = GMI – TVC [1]

NMI = GMM – TFC [2]

Where, GMM, gross marketing margin (N); GMI, gross marketing income (N); TVC, total variable cost (N); NMI, net marketing income (N); TFC, total fixed cost (N)

2.6. Marketing Efficiency Analysis

The shepherd's index was used to determine the marketing efficiency for traders in Sweet Potato in the study area. The shepherd's index was developed by shepherd's (1965) is as follows;

$$ME = \frac{GMM}{TMC} - 1 \quad [3]$$

Where, ME, marketing efficiency index; GMM, gross marketing margin in naira 50 kg^{-1} of sweet potato; TMC, total marketing cost in naira kg^{-1} of sweet potato. The higher the efficiency ratio, the higher the marketing efficiency and vice versa.

3. Results and Discussion

3.1. Socio-Economic Characteristics of Sweet potato Marketers

The result showed that about 77.6% of the sweet potato marketers were male while 22.4% were females. This could be attributable to the high cultural belief attached to the restriction of women to involvement in activities that could expose them to the general public. This opposed the finding with Fadipe et al. (2015) that majority of cocoyam wholesalers and retailers were females.

Table 1. Socio-economic Characteristics of Sweet Potato Marketers

Variables	Frequency	Percentage
Gender		
Male	38	77.6
Female	11	22.4
Age		
18 – 27	4	8.2
28 – 37	17	34.7
38 – 47	23	46.9
48 – 57	5	10.2
Marital status		
Single	18	36.7
Married	31	63.3
Widow/widower	0	0
Educational level		
Non-formal education	8	16.3
Primary education	18	36.7
Secondary education	21	42.9
Tertiary education	2	4.1
Membership of cooperative		
Yes	8	16.3
No	41	83.7
Access to credit		
Yes	10	20.41
No	39	79.59
Marketing experience		
1 – 5	8	16.3
6 – 10	21	42.9
11 – 15	17	34.7
>15	3	6.1
Total	49	100

Source: Field Survey, 2018

Table 1 shows that majority of the sampled Sweet Potato marketers (46.9%) fell within the age group of 38 - 47 years. Overall, 91.8% of the respondents were young people whose ages ranged between 28 to 57 years while 8.2% of them were people whose ages ranged between 18 to 27 years.

The result indicated that they were still in their active productive years and, hence, enjoyed high participation in Sweet potato marketing and high level of market efficiency. This implies that the marketers are strong, agile, and active and can participate adequately in marketing activities. This agrees with the findings of Muhammed, (2011) who opined that the average age of all sampled traders was 40 years and standard deviation was 11.33years. This also agrees with the findings of Bassey et al. (2013) who conducted a study on rice and posited that rice marketers were at their youthful age, a situation which can promote market efficiency.

The significance of marital status on agricultural production and marketing can be explained in terms

of the supply of agricultural family labour. It is expected that family labour would be more available where the household heads are married. The study revealed that 63.3% of the marketers were married while 36.7% were single. This implies that about 63.3% of the marketers interviewed in the study area had family responsibilities, which shows that the majority were married and had children which would help in readily available family labour supply to accomplish various market operations. This finding is also in line with those of Solomon, (2008) and Banmeke, (2003), which indicate that large household sizes assist more in agricultural activities.

The level of education determines the level of opportunities available to improve livelihood strategies, enhance food security, and reduce the level of poverty. It affects the level of exposure to new ideas and managerial capacity in marketing and the perception of the household members on how to adopt and integrate innovations into the household's survival strategies. The result revealed that 83.7% of the sweet potato marketers had formal education while 16.3% had no formal education. This indicates that the marketers can read and write. This finding is in line with Amaza, (2009), who found that literate marketer shad increased marketing efficiency. This result is also in consonance with the findings of Akpokodje et al. (2003) that the majority of sweet potato farmers in Nigeria could read and write. About 83.7% marketers did not belong to any cooperative organization. This implies that the perceived benefits derivable from membership of cooperative societies are inaccessible to this lot of sweet potato marketers and, hence, decreased efficiency in the effective management of resources. This finding is in line with Odebiyi, (2010) that cooperative groups ensure that their members derive benefits from such groups in such a way that they could not have derived individually.

Membership of a cooperative society creates an avenue for farmers to pool their risks, in addition to providing access to resources and information that will improve their production practices, thus high lighting the importance of some social capital in improving productivity (Shehu et al., 2010**).** The results indicated that the majority 79.59 % of marketers had no access to credit to finance their sweet potato marketing activities. This means that the main source of income for the traders was personal savings. This low access to credit could be attributed to the fact that government seldom grants financial credit to large numbers of marketers. This agrees with the findings of Bassey et al., (2013) and Abah et al., (2015) who found that majority of marketers depends on personal or family funding for their business and, hence, do not borrow from any commercial banks. Furthermore, 42.9% had 6-10years' experience in sweet potato trading. This finding is in agreement with that of Muhammed, (2011), who found that a considerable number of soya beans marketers had about 6-12 years of marketing experience.

Table 2. Marketing Margin and Marketing Efficiency of Sweet potato Marketers

Parameters	Value (₦)
Acquisition costs of sweet potato	9,300
Transport cost	530.38
Taxes and gate fee(s)	100
Labour costs	530
Storage costs	762.24
Sanitation fees	156.10
Total variable costs	11, 378.72
Store/shade rent	200
Utilities (water, light)	150
Total fixed costs	350
Total costs	11,728.72
Gross income	18,300.00
Gross marketing margin	6,921.28
Net marketing Income	6,571.28
Marketing Efficiency	0.59

Source: Field Survey, 2018

Table 3. Distribution of Respondents by Constraints in Sweet Potato Marketing

Constraints	Frequency	Percentage
Inadequate capital	45	91.84
Inadequate and poor storage facilities	44	89.80
Low profit	43	87.76
Price fluctuation	42	85.71
Lack of standard measures	41	83.67
Poor communication and market information	40	81.63
Inadequate infrastructure	39	79.59
Poor road network	36	73.47
Pest infestation	24	48.98

Source; Field Survey, 2018

3.2. Marketing Margin and Marketing Efficiency Analysis

The result of the marketing margin and marketing efficiency analysis is as given in Table 2. The result shows that the gross marketing margin and net marketing margin were ₦6,921.28 and ₦6,571.28 with marketing efficiency of 0.59 kobo. This result is slightly below the finding is also above the finding of Ocholi et al. (2017) who found that the marketing efficiency of sweet potato in Benue State for wholesalers and retailers to be 0.85kobo and 0.94 kobo respectively.

3.3. Constraints of Sweet potato Marketing

Table 3 highlights the problems associated with sweet potato marketing in the study area. The result reveals that, inadequate capital, low profit, inadequate and poor storage facilities, price fluctuation and lack of standard measures were some of the problems identified as militating against Sweet Potato marketing in the study area. Amongst all, the problems of inadequate capital, inadequate and poor storage facilities and low profit rank the first three major problems. The combined effect of these problems on the marketing system could bring about a distortion in the structure, conduct and performance of the marketing process. Hence, these lead to the reduction in profit margin of the marketers and consequently, discourage the present and prospective marketers of the commodity in participating in the enterprise in the study area. This result is in agreement with the findings of Girei et al. (2014), they reported that inadequate capital, pest infestation and low profit were the major problems affecting crop marketing in the area.

4. Conclusion

Sweet potato marketing is a profitable business with attractive net return of ₦ 6,571.28 in Zing LGA of Taraba State. The findings showed that the sweet potato market in the area is competitive with a relatively high level of inequality among the traders. It is therefore, recommended that government as well as non-governmental agencies should empower the marketers through the provision of micro credit facilities to encourage more people to go into sweet potato marketing, Sweet potato marketers should form cooperative group in order to get loans from financial institutions to increase their capital base; loans will be easily acquired from these cooperatives without blockages and government should provide an enabling environment through the provision of needed infrastructural facilities especially modern storage facilities.

List of Abbreviations: LGA, Local Government Area; NPC, National Population Commission.

Competing Interest Statement: The authors declared that they have no competing interest.

Author's Contribution: Gani, B.S. designed the study and supervised data analysis, Rukwe, D. T. collected and analyzed data and drafted the manuscript and and Elizabeth, Y.J. critical reviewed the draft manuscript. All authors read and approved the final manuscript.

Acknowledgments: We really thank sweet potato producers for their time spent giving us information related to marketing of sweet potato.

References

Abah, D.A., G.A. Abu and P.I. Ater. 2015. Analysis of the Structure and Conduct of Paddy Rice in Benue State, Nigeria. American J. Market. Res. 1(2): 70-78.

Ahmad, I.M., S.A. Makama, V.R. Kiresur and B.S. Amina. 2014. Efficiency of sweet potato farmers in Nigeria: Potentials for food security and poverty alleviation. IOSR J. Agric. Veter. Sci. 7(9): 1-6.

Akoroda, M. 2009. Sweet potato in West Africa. In: G. Loebenstein and G. Thottap Pilly (Eds.), The Sweet potato, p.359-390.

Akpokodje, G., F. Lancon and O. Erenstein. 2003. Nigeria"s rice economy; state of art paper presented at the Nigerian Institute for Social and Economic Research (NISER)/West Africa Rice Development Association (WARDA), Nigeria rice Economy stakeholders workshop Ibadan, 8-9 November, p: 55.

Amaza, P., A. Tahirou, K. Patrick and T. Amare. 2009. Changes in household food security and poverty status in PROSAB area of Southern Borno State, Nigeria. Promoting Sustainable Agriculture in Borno State (PROSAB). International Institute of Tropical Agriculture, Ibadan, Nigeria. 1-40.

Bassey, N.E., U.E. Okon and O.W. Ibok. 2013. Intermarket Performance and Pricing Efficiency of Imported Rice Marketing in South–South Nigeria: A Case of Akwa Ibom State Traders. Sci. Edu. Centre North America. 1(2): 53 -63.

Dogon-Daji, S.D. 2005. Economics of Dry Season Onion Production and Marketing in Sokoto and Kebbi States. A Ph. D thesis submitted to the Department of Agricultural Economics and

Extension Usman Dan Fodio University, Sokoto, Nigeria.

Egbe, O.M., S.O. Afuape and J.A. Idoko. 2012. Performance of improved sweet potato (*Ipomea batatas L.*) varieties in Makurdi, Southern Guinea Savanna of Nigeria. Am. J. Exp. Agric. 2(4): 573–86.

Fadipe, A.E.A., A.H. Adenuga and T.E. Ilori. 2015. Analysis of cocoa marketing in Sagamu local government area of Ogun State, Nigeria. Trakia. J. Sci. 3: 208-213.

Fayinka, F.A. 2004. Food Security in Production in Nigeria: Challenges under Democratic Dispensation. Paper presented at the 9th ARMTI Annual Lecture held on March 24, 2004.

Girei, A.A., B. Dire, M. Salihu and M.M. Iliyasu. 2014. Assessment of the Problem Affecting the Structure, Conduct and Performance of Cowpea Marketing in Yola North and Yola South LGAs in Adamawa State, Nigeria. Int. J. Agric. Innov. Res. 2(4): 436-440.

Ikechi, K. 2006. The performance of vegetable production and marketing in Aba area, Abia State. Proceedings of the 40th conference of Agricultural Society of Nigeria, held in Umudike, Abia State. 133-134.

Low, J. 2009. Sweet potato in Sub-Saharan Africa 'In' The sweet potato. 7-9.

Mathew, O.A. and A.A. Fatimoh. 2016. Profitability and Technical Efficiency of sweet potato production in Nigeria. J. Rural Dev. 31(5): 105-120

Muhammed, B.T. 2011. Socio-economic analysis of melon production in Ifelodun local government area, Kwara State, Nigeria. J. Dev. Agric. Eco. 3(8): 362-367

NPC. 2006. The new partnership for Africa development food summit. 8-12 September, Abuja, Nigeria.

Ocholi A., T.N. Zacharias and M. Udeh. 2017. Economic Analysis of Sweet Potato Marketing in Benue State, Nigeria. Quest J. Res. Bus. Manag. 5: 41-47.

Odebiyi O.C. 2010. Impact of Microfinance Bank loan on Aquaculture Development in Ogun State Nigeria. A Project Report Submitted to the Department of Aquaculture and Fisheries Management, Federal University of Agriculture Abeokuta.

Shehu, J.F., J.I. Iyortyer, S.I. Mshelia and A.A.U. Jongur. 2010. Determinants of Yam Production and Technical efficiency among yam Farmers in Benue State, Nigeria, J. Soc. Sci. 24(2): 143-148.

Shepherd, G.S. 1965. Farm Products-Economic Analysis. Iowa State University Press, Iowa, USA. 254.

Solomon, O. 2008. Identification of training needs of oil palm Farmers in Rainforest Zone of south western Nigeria. Pakistan J. Nut. 5: 231-245

Srinivas, T. 2009. Economics of sweet potato production and marketing. The Sweet potato. 436-247.

Tottappily, G. and G. Loebenstein. 2009. The sweet potato. New York: Springer.

Ukpabi, U.J. 2004. Sustainable Post harvest Technologies for the major Food Crops and Flesh. Paper presented at the workshop for Abia State Local Government Agricultural Officers. Held at National Root crops Research Institute Umudik10th -12th May 2004.

Vincent, E., Q. Florent, H.B. Roméo, M.I.K. Chabrolle, M.G.K. Emeric, I.C. Bienvenu and A. Adam. 2018. Assessment of production and marketing constraints and value chain of sweet potato in the municipalities of Dangbo and Bonou. Agric. Food Sec. 7(15): 1-12.