Analysis of Price Variation in the Marketing of Garri in Delta State, Nigeria

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Abstract

The study examined price variation in the marketing of garri in Delta State Nigeria. A multi-stage sampling procedure was used in drawing up a sample of 180 garri marketers from six purposively selected major garri markets each from six purposively selected Local government areas. Data collected with the aid of questionnaire were analysed using both descriptive and inferential statistics. The results revealed that majority of the marketers were females that are still in their economically active age group and relatively literate. Majority of the marketers were middlemen who sold mostly to their fellow middlemen. Most of the respondents agreed that marketing cost is the major cause of price variation in garri market while season of the year was the most notable problem facing garri marketers in the study area. Also, the result of Analysis of Variance revealed that there were significant differences in garri prices among the six markets. It was concluded that in order to stabilize price of garri and income of garri marketers, in order to ensure sustainable food security in Delta State, measures should be taken to provide adequate transportation and establish storage facilities. This will invariably cut down marketing costs.

1. Introduction

Cassava (*Manihot esculenta*) is not only a very important staple food for urban and rural populace in Nigeria, but is also part and parcel of the rural livelihoods of the people. With an estimated annual production of 43.4 million metric tonnes in 2007 which increased by 2.8% to 44.6 million metric tonnes in 2008 (FAO, 2009) Nigeria leads the rest of the world in the production of this staple. Whereas it is usual to associate the reported increasing trends to introduction of improved farm management practices, use of high-yield and disease resistant varieties and various development initiative efforts of the Nigerian government (Nyerhovwo, 2004), the trends show that the increase had been accompanied by similar substantial increasing trends in land area cultivated, but marginal growth in yield estimates.

According to Nyerhovwo (2004), among the starch staples, cassava gives a carbohydrate production which is about 40% higher than rice and 25% more than maize with the result that cassava is the cheapest source of calories for both human nutrition and animal feeding. It is processed into various products such as lafu, garri, etc but garri is the most commonly consumed in Nigeria.

Garri is a fermented and roasted grannular product from cassava which was hitherto considered a poor man's food until recently. It is now elevated to an urban convenient food; it is a cheap and ready source of vital energy. Ingawa et al. (2008) reported that cassava (garri) is truly a national food with urban market presence. It is mainly produced for domestic markets but presently some of the products from cassava such as garri and fufu flour are known to be finding their ways to emigrant Nigerian communities in United State and Europe (CBN, 2001).

The ability of the marketing system to allocate garri over space and time has been a serious problem in agricultural marketing. Higgs et al. (1981) observed that farmers are in business to sell their farm products at a fair return or profit. CBN (2001) while commenting on post-harvest pricing and marketing, suggested that

agriculture like any other private enterprise is propelled by entrepreneurs who are motivated by profit from their investments and entrepreneurship. Consequently, prices of agricultural products vary from month to month and even from day to day. Prices also vary between alternative markets. Having realized the fact that prices varies considerably between different market location and seasons of the year, it is important to examine the reasons that may be responsible for such variations and to equally measure the extent of such price differences between places and time.

Therefore, this study analyses price variation in the marketing of garri in Delta State Nigeria. Specifically, it described the socio-economic characteristics of the respondents, ascertain the causes of price variation within and among garri markets, identify the marketing channel for garri and ascertain the major constraints of garri marketing.

The following hypothesis, stated in the null form, was tested:

H_o: There is no significant price variation among markets in Delta State

A lot of efforts are currently being done in the marketing of garri however, not much attention has been given to the price fluctuation being witnessed in the marketing of cassava products, especially garri in Delta state. The result of the study would serve as a useful guide to policy makers to effectively formulate commodity price related policies in the state.

2. Literature Review

Prices of agricultural products vary from month to month and even from day to day (Olukosi et al., 2007; Ejiga, 1988; CBN, 2011, Sani et al., 2011). Prices of different grades of a commodity and between alternative markets also differ (Ejiga, 1988; Olukosi et al., 2007).

According to the Central Bank of Nigeria (CBN, 2011) there were price variations in major agricultural commodities in Nigeria. A survey conducted by the CBN indicated that the domestic retail prices of seven out of the fourteen food items trended upward when compared with their levels in 2010 (CBN, 2011). The price increases for most of the commodities were attributed largely to seasonal factors, coupled with the distribution constraints and hoarding attitudes of middlemen (CBN, 2011). Olukosi et al. (2007) identified divergence between planned output and realized output, speculative activities of middlemen, seasonality in production and marketing, and changes in demand and supply as some of the causes of price variation of agricultural commodities. They further asserted that the nature of this price variation or fluctuation could be seasonal, or cyclical. Similar observation was made by Sani et al. (2011) in Iran. Therefore the need to develop a marketing system that will connect the areas of production and consumption of agricultural products becomes vital (Adegeye & Dittoh, 1985; Ihimodu, 2003).

The middlemen link the producers and consumers; they perform several functions which include the effort to satisfy the wishes of the consumers with respect to space, form and time utilities (Ejiga, 1988; Adegeye & Dittoh, 1985; Ihimodu, 2003). Therefore the product price at the retail level is quite different from its price at the farm gate. This difference may be attributed to time, place or the form that the product is (Ejiga, 1988; Sani et al., 2011).

Maisamari (2002) asserted that widespread interregional and inter-seasonal variation in prices tends to hamper adequate planning of farming, industrial operations and output expansion. Offseason production can take advantage of higher prices. Producers can benefit the most if they can manage to offset the costs or expenses incurred, which are usually higher than the ones generally incurred during the regular season, with higher sales prices (Shepherd & Ilboudo, 2010). Thus counter-seasonal production can mitigate the effects of the decline in prices observed at harvest time (Shepherd & Ilboudo, 2010; Sani et al., 2011).

Market information service (MISs) can also help improve producer's income. To be useful market information services (MISs) must provide information on prices in the short term and on the places and markets where it is more convenient to sell (Shepherd & Ilboudo, 2010). They must also show the trends of seasonal and inter-annual price variations. This according to Shepherd and Ilboudo (2010) allows producers to decide whether to stockpile or sell and to know whether to sell all their products or to keep some for their own use or for future sale.

3. Methodology

The study was carried out in Delta State and it lies roughly between longitude 5º00' and 6º45' East and latitude 5º00' and 6º30' North. It has an estimated population of about 4 million (NPC, 2006) and total land area of 17,440 square kilometers, and about one-third of this is swampy and waterlogged. It experiences average rainfall

of about 2000 mm per annum with an average monthly temperature of 30.4-36.4ºC and a relative humidly varying room 56-86 percent per annum. Delta state is divided into three agricultural zones namely, Delta South, Delta North and Delta North.

A multi-stage sampling procedure was used for the study. The first stage was the purposive selection of six local government areas, two from each agricultural zone based on the high concentration of garri markets.

The selected local government area included: Oshimilil South and Ika South in Delta North; Ethiope South-west and Ughelli North in Delta Central; and Uvwie and Isoko South in Delta South. Next was the random selection of major garri markets from each of the six selected local government areas. Thus, a total of six markets were used for the study which were Abavo, Ogbe-ogonogo, Oghara, Ughelli, Effurun and Oleh markets. Finally, thirty (30) major garri marketers were randomly sampled. This gives a total of one hundred and eighty (180) respondents that were used for the study. Data used for this study were collected using well structured questionnaire and interview schedules.

Data were analysed using descriptive statistics and Analysis of variance. Specifically, the socio-economic characteristics of the marketers, causes of price variation within and among garri markets, the major constraints of garri marketing were determined using descriptive statistics such as frequency counts and percentages, while Analysis of Variance (ANOVA) was used to ascertain if there were significant price variations for garri among the different markets in the study area.

4. Results and Discussion

4.1 *Socio-economic Characteristics of the Respondents*

Table 1. Socio-economic characteristics of respondents

Characteristics	Frequency (n=180)	Percentage (100%)
AGE		
25-29	42	23.3
30-34	48	26.7
35-39	51	31.7
40-44	21	11.7
45-49	18	6.7
Mean age	34.4	
Actual range	25-49	
MARITAL STATUS		
Never married	45	25.0
Married	90	50.0
Separated	18	10.0
Divorced	18	10.0
Widow	9	5.0
EDUCATIONL STATUS		
No formal education	9	5.0
Primary education	45	25.0
Secondary education	90	50.0
Tertiary	36	20.0
BUSINESS EXPERIENCE(YEARS)		
Less than 5	18	10.0
6-10	75	41.7
11-15	45	25.0
16 and above	42	23.3
SOURCE OF CAPITAL		
Personal Saving	105	58.3
Osusu	60	33.3
Co-operative	15	8.4

Source: Authors' computation.

The result of the socio-economic characteristics of the respondents in the study area is presented in Table 1. The result revealed that 93.4% of the respondents were within the age group of 25-49 years and mean age is 34 years. The implication is that most of the marketers are in their economically active age group and this is in agreement with the findings of Ogungbile et al. (2002) who asserted that most agribusiness operators are in their economically active age group. Majority (88.3%) of the respondents were females which means that women are mostly involve in garri marketing in Delta State. This finding is supported by the report of CTA (2007) that women undertake almost ninety percent of agricultural marketing.

Fifty percent of the respondents were married which implies that larger majority of garri marketers in the study area are married. This shows that garri marketing requires the effort of many hands. This finding agrees with the finding of Maisamari (2002) who reported that most people engaged in agricultural activities are married. Most of the respondents had formal education (95%), had at least 6-10 years experience in garri marketing (41.7%) and sourced their capital from personal savings (58.3%).

4.2 *Distribution of Respondents according to Causes of Variation in Selling Price*

As presented in Table 2, majority (63.3%) of the respondents agreed that marketing costs such as processing, storage, transportation and other costs incurred before garri gets to the finial consumer cause variation in the price of garri in the study area. This finding is in agreement with that of Ihimodu (2003) who asserted that the differences between the price at farm gate and the price in the market place represent the payment for the owners of storage facilities and those persons who assume the risk of price change. More than thirty six (36.7%) of the respondents agreed that product cost (the amount it costs buying garri) causes variation in price. This could be as a result of added costs incurred while transporting garri from its area of surplus to areas where it is in short supply and mostly needed. This adds to the product cost thereby increasing price at sale point (Ihimodu, 2001; Olukosi et al., 2007).

Table 2. Distribution of respondents according to causes of price variation

Causes	Frequency	Percentage
Marketing cost	114	63.3
Product cost	66	36.7
Total	180	100.0

Source: Authors' computation.

4.3 *Marketing Channel for Garri*

Table 3. Distribution of respondents according to marketing channel

Source of garri sold	Frequency (n=180)	Percentage
Personal farm	51	28.3
Retail Purchase	21	11.7
Wholesale purchase	108	60.0
When garri is sold to		
Assembler	24	13.3
Wholesaler	36	20.0
Retailer	57	31.7
Consumer	63	35.0
When garri is bought from		
Producer	114	63.3
Assembler	6	3.3
Wholesaler	18	10.0
Personal farm	42	23.3

Source: Authors' computation.

Table 3 presents the marketing channels through which garri gets to the final consumers. It show that 28.3% of the respondents source garri sold from personal farm, meaning they are producers; while 60% and 11.7% of the respondents source garri sold from wholesale and retail purchases respectively. This means that majority of the

respondents constitute the bulk of middlemen. As presented in Table 3, it shows that 13.3%, 20.0%, 31.7% and 35.0% of respondents sold garri to assemblers, wholesalers, retailers and consumers respectively. This implies that garri passes through chains of middlemen before reaching the final consumers.

4.4 *Constraints of Garri Marketing*

Table 4, presents the summary of the constraining factors affecting garri marketing in the study area. The result shows that the season of the year with a mean score of 4.52 is the most serious problem facing garri marketing in the study area which causes price variation in price of garri. This could be attributed to dry season when harvesting tends to reduce and supply becomes low as a result of caking of the soil which makes harvesting difficult and costly (Olukosi et al., 2007).Majority of the respondents also agreed that transportation cost with a mean score of 4.35 is a serious problem facing garri marketing. This finding is in line with that of Ayinde and Idris (2004) who asserted that high transportation cost of agricultural products bring about wide variation in price between the urban and rural areas.

Other constraints facing garri marketing in the area were as follow: cost of production

($\overline{X}$=4.30), inadequate capital ($\overline{X}$=4.15) and activities of middlemen ($\overline{X}$=4.15). The implication of this finding is that these factors widen the price difference between the price at the point of produce and the price at the point of consumption.

Table 4. Constraints in garri marketing

Constraint	Standard deviation	Mean (X)	Rank
Season of the year	0.50	4.52	1
Transportation cost	0.76	4.35	2
Cost of Production	0.67	4.30	3
Processing cost	0.66	4.27	4
Lack of capital	0.76	4.15	5
Activities of middlemen	1.04	4.15	5
Low supply	1.17	3.92	7
Lack of market information	0.76	3.83	8
Low demand	0.98	3.72	9
Price of last season	0.09	3.62	10
Market schedule	1.06	3.38	11

Source: Authors' computation.

4.5 *Price of Garri in the Six Markets*

Table 5 presents the mean price of garri (50 kg bag) in the six markets. The result shows that Abavo has the highest mean price of ₦3, 650 among the six selected markets while Oleh market has the lowest mean price of ₦2, 920 per 50kg bag of garri

Table 5. Mean prices of garri in the six markets

Name of market	N	Mean price (₦)	Standard deviation	Min	Max.
Abavo	30	3650	126.930	3500	3800
Ogbe-ogonogo	30	3560	241.293	3000	3800
Oghara	30	3630	94.868	3500	3800
Ughelli	30	3360	291.356	2800	3700
Efurun	30	3360	225.093	3000	3500
Oleh	30	2920	311.983	2500	3400
Total	180	3400	337.488	2500	3800

Source: Authors' computation.

4.6 *Test of Hypothesis*

The result of the hypothesis which says that there is no significant different among the prices of garri in the six markets in the study area is presented in Table 6.The result of the analysis of variance (ANOVA) tested at 5%

level of significance shows that there was significant difference in prices of garri in the six markets.

Since the value of F calculated (18.70) is greater than F tabulated (3.47), the null hypothesis which says that there is no significant difference in price of garri among the selected six markets was rejected and the alternative hypothesis accepted.

Table 6. Analysis of variance of comparing price variation in the different markets

	Sum of square	DF	Mean squares	F	Sig
Between groups	12009400	5	774800	18.701	0.004
Within groups	853430	174	52703.704		
Total	12862830	179			

Significant at P<0.05.

Source: Authors' computation.

Further comparison of mean prices among the markets was conducted using scheffe test as shown in Table 7. The sheffe test result revealed that among all the markets, Oleh market has the least mean price and showed very wide variation in mean price from other markets.

Effurun and Ughelli markets belong to the same subset and as such have almost equal mean price, Ughelli and Ogbe-ogonogo markets have almost equal mean price while almost the same mean price exist in Oghara, Ogbe-ogonogo and Abavo markets.

Table 7. Separation of mean prices of garri using sheffe test

Market	N	Subset for alpha = 0.05			
		1	2	3	4
Oleh	30	2927			
Effurum	30		3280		
Ughelli	30		3360	3360	
Ogbe-ogonogo	30			3560	3560
Oghara	30				3630
Abavo	30				3650

Source: Authors' computation.

5. Conclusion and Recommendations

Findings from this study showed that females dominate in garri marketing and are very experienced in the business. There were also variations in the prices of garri in the six markets. Marketing costs and seasonality of the product are the major problems facing garri marketers in the study area. The implication of this variation in price of garri is that it causes instability in income level of the producers and marketers as well and this will go a long way in affecting their welfare.

Base on the findings of the study the following recommendations are made:

Since seasonality of garri and transportation costs are major causes of variation of prices measures should be taken to encourage the production of garri throughout the year and to provide adequate transport facilities. As a measure to promote all-season production of garri, improved cassava varieties and credit facilities should be given to farmers.

The government should encourage the establishment of storage facilities in order to store enough product throughout the year for sale at suitable outlets so as to prevent the hoarding practices of middlemen. It is hoped that if these recommendations are implemented, the price variation in the marketing of garri in Delta State, Nigeria will be highly reduced.

References

Adegeye, A. J., & Dittoh, J. S. (1985). *Essentials of Agricultural Economics.* Impact Publishers Nigeria, Limited, Ibadan.

Ayinde, O. E., & Idris, A. O. (2004). Intermarket and seasonal variation in prices. An appraisal of maize marketing in Kwara State. P. 11. Mimeograph.

Central Bank of Nigeria. (2001). Report of the first Annual Monetary Policy Conference, November, 2001.

Central Bank of Nigeria. (2011). *Economic and Financial report for the first half of 2011*. (pp. 180-181). CBN Nigeria.

Ejiga, N. O. O. (1988). Pricing efficiency for cowpea in Northern Nigeria. Readings in Agricultural marketing. In T. O. Adekanye (Ed.). (pp. 157-167). Longman Nigeria Limited, Ibadan.

FAO. (2008). Expert Meeting on Global Perspectives on Fuel and Food Security. Technical report 18-20 February 2008, Rome.

Higgs, C. P., Ritson, W. Y., & Williams cultural Mathematics. London: Interstate printers and publishers Limited. pp. 2-6.

Ihimodu, I. I. (2003). Marketing of Agricultural products and the food security Programme in Nigeria. Paper persecuted at workshop organized by the Nigerian Rural sociological Association, November 25-28.

Ingawa, W. A., Oyebanagi, T., & Olokum, C. C. (2008). Tone serves analysis of Garri Prices, 1993-2007. Proceedings of 10th Annual National conference of Nigeria Association of Agricultural Economists, 7th -10th October, 2008. p. 509.

Maisamari, I. Y. (2002). Seasonal Price Variation. Paper presented at the tenth annual conference of the Central Bank of Nigeria's Zonal research Unit, Abuja, Nigeria, April 6th -8th, p. 16.

Nyerhovwo, S. A. (2004). Analysis of the marketing of tomato in Edo State: Unpublished B. Agric. project Department of Agricultural Economics and Extension services, University of Benin. p. 61.

Ogungbile, A. O., Tabo, R., & Rahman, S. A. (2002). factors Affecting adoption of ICSV 111 and ICSV 400 sorghum varieties in Guinea and Sudan Savanna of Nigeria. *The Plant Scientists, 3*, 21-23.

Olukosi, J. O., Isitor, S. U., & Ode, M. O. (2007). Introduction to Agricultural marketing and prices: principles and applications living Books Serves. GU. Publications Abuja, FCT. p. 142.

Sani, B., & Farahni, H. A. (2011). Determination of seasonal price variations for some food crops in Iran at karaj zone to achieve sustainable Agriculture. *Journal of development and agricultural economics, 3*(1), 7-12.

Shepherd, A. W., & Ilboudo, J. (2010). Marketing of agricultural products. Food and Agriculture Organization, Rome.