Policy Issues in the Structure, Conduct and Performance of Banana Market in Anambra State, Nigeria

*Enibe, D.O ** S.A.N.D. Chidebelu, ***E. A. Onwubuya, ***C.Agbo, and ****A.A. Mbah.
*Department of Agricultural Economics/Extension Anambra State University Igbariam Campus, Anambra State. E-mail: enibedav@yahoo.com
**Department of Agricultural Economics University of Nigeria, Nsukka
***Department of Agricultural Extension University of Nigeria, Nsukka
****Forestry Research Institute of Nigeria Federal College of Forestry,
P. M. B. 2019, Jos.

Abstract

This study described the structure, conduct and performance of banana market in Anambra State of Nigeria. The specific objectives are to describe the structure of the banana market; analyze the conduct of the banana market; determine banana market performance; and examine the major problems of banana marketing in the area. One hundred and twenty respondents spread in six major urban centers in the State and their concomitant major markets were randomly selected for interview. Descriptive statistics, Gini coefficient measure and the price spread analysis were used to analyse data. The study revealed that the activities of the banana market structure is almost optimum with a good conduct and performance as farmer's share of the consumer spending is 56%. The study also shows that lack of storage facilities and capital were the most pressing problems of the middlemen while the farmers were constrained from increased production by lack of capital, high yielding and disease resistant banana varieties. Policy recommendation to this effect was suggested.

Key words*: Policy, structure, conduct, performance and banana.*

INTRODUCTION

Cultivated bananas (cultivars) belong to the Euniusa of the family *muraceae*. They are natural polyploids of two species of Musa: *musa acuminata* (genome A) and *musa balbisiana* (genome B) (CTA, 1987, Anyanwu 1982, Wardlaw, 1972). The chronology of early evolution and migration of edible banana is unknown. It is, however, one of the earliest food crops ever domesticated (IITA, 1994). The importance of musa is still widely ignored by the general public worldwide, despite the fact that it represents the most important agricultural commodity in the developing world after rice, wheat and milk (Frison, 1997). Banana and plantains are basic staple crops which play essential roles in providing food supplies for both urban and rural populations of developing countries (Adedoyin, 1984). For this, Nwogu (1997) described cardaba banana cultivar as a relief to the excruciating hunger in south-eastern Nigeria. FAO (2008) stated that banana is playing a crucial food security role in many developing countries.

The quantity of banana produced in Nigeria has not been estimated. However, it is known to be produced in varying amounts within the following States: Abia, Akwa Ibom, Anambra, Benue, Cross River, Delta, Enugu, Kaduna and Ondo. Specifically, 364,000 tonnes and 1,057,000 tonnes were produced in these States in 1992 and 1993 respectively (FOS, 1995). The world production of Banana was estimated at 99 million tones (FAO, 2008). This figure is an approximation because the bulk of world banana production (85%) comes from relatively small plots and kitchen or backyard gardens where statistics are lacking (FAO, 2008). The most commonly grown cultivars within the savanna environment of Nigeria are sweet bananas and cooking bananas. According to Bayeri and Ortiz (1995), banana genotypes grown in high rainfall environment are Red banana (prata), silk, gross Michel and dwarf carvendish. The cultivar "cardaba", was in the past few years introduced by the – International Institute of Tropical Agriculture (IITA) and has been adopted by the people of the region.

Efficient agricultural marketing contributes to the improvement of rural incomes in developing countries (Dixie, 1989). Inequality of income between the rural and urban areas draws people away from agricultural production and places great stress upon the infrastructure and social services of a country's towns and cities (Crawford, 1997). Perhaps, Nigeria would have avoided this scenario if she had been able to motivate farmers to continue in agricultural production and this would have been possible if the disparity between urban and rural incomes had been reduced through the adoption of market orientation strategies. In Nigeria, and in many developing countries, government participation in production and distribution of goods and services has brought about many structural distortions in the economy. These distortions could appropriately be corrected by a return to market prices for all products and resources through encouragement of the competitive private sector (Crawford, 1997). Building an effective and efficient marketing system, therefore, becomes pertinent as an important long term strategy for adapting sustainable agricultural development.

Banana is an important source of regular weekly or monthly income for the farmer's families (Rivera, 2004). Its world export volume has also increased in most of the producing regions (FAO, 2008). For example, the Philippine foreign markets export earnings from fresh and processed banana averaged US $244.13 million in 1997 (Rivera, 2004). The Philippines is the only supplier of banana chips in the worlds, accounting to 95% of the annual export receipts of processed bananas between 2000 to 2004 (Rivera, 2004). This calls for more statistical data on its production and marketing in Nigeria. Researchers are, therefore, being encouraged to accumulate accurate data for economic decision making on the crop (Ker et. al, 1997). This is especially as banana under the General Agreement of Tariff and Trade (GATT) can take advantage of lower tariff in the export market (Rivera, 2004).

This study aimed at the determination of the structure, conduct and performance of banana. It also aimed to examine the major problems of banana in the area, and make recommendations for policy decisions on the crop.

Data obtained from the study will guide policy makers in taking the best policy decisions on the crop. It will also induce farmers to move into commercial production of the crop and give room for profitable and efficient marketing of the crop in the study area. Further research data useful for students and researchers will also be provided.

METHODOLOGY

The study area is Anambra State of Nigeria. The State is chosen for the study because of its large population and the existence of the Onitsha market which is the biggest market in the West African sub-region where large quantities of banana are marketed. Again, banana is a favourite fruit consumed in prodigious amounts by both people of Anambra State and those of other nationalities (Beth, 1989). It is also boiled, roasted, stewed and made into porridge. A combination of banana mixed with water yam or maize, called "ukpo ogede" is a common diet in the State. Six major urban centers in the State and their concomitant major markets were randomly selected for the study through a multi-stage random sampling technique. In each of the markets, five wholesalers, ten retailers and five farmers were randomly selected and interviewed. This gave a total of 120 respondents comprising 30 wholesalers, 60 retailers and 30 farmers. Set of pre-tested questionnaires were administered to the respondents using trained enumerators to obtain information used in realizing the objectives of the study. The secondary data were sourced from books, journals, bulletins, periodicals and research documents. The specific objectives were realized using descriptive statistics, such as means, percentages and frequency – distribution; Gini coefficient measure and the Lorenz curve as well as marketing margin/price spread analysis. The mean is the value arrived at by dividing the sum of observations by the total number of observations while frequency is used to denote the number of times a category or class occurs (Rangaswamy, 2006). The Gini coefficient is a measure of statistical dispersion most prominently used as a measure of inequality of wealth or product distribution. It is defined as a ratio with values between 0 and 1 (Wikipedia, 2008). A low Gini coefficient indicates more equal incomes, wealth or product distribution, while a high Gini coefficient indicates more unequal distribution. 0 (zero) corresponds to perfect equality and 1 (one) corresponds to perfect inequality (Wikipedia, 2008). The Gini coefficient summarizes the Lorenz curve which compares the cumulative shares of the product ordered from small rang to the large shares of the product or income that would accrue to the sellers and the farmers under perfect equality (the diagonal) and the total area under the line of perfect equality. In graphical terms, the Gini index is the ratio of the area between the Lorenz curve and the line of perfect equality. The Gini coefficients of the middlemen and the farmers is calculated from the formular

$$G = \frac{\bar{d}}{2\bar{Y}}$$

Where $\quad \bar{d} \quad = \quad 2\sum_{1}^{k} N^1(X_1)[1 - N^1(X_{i+1} - X_i)]$

and
G	=	Gini coefficient
d	=	Coefficient of mean difference
$N^1(X_i)$	=	Cumulative relative frequency
K	=	Number of classes
$\bar{Y}$	=	Mean of the total quantity of product
$\bar{X}$	=	Mean of product controlled by the ith class

Price spread analysis measures the gross percentage of the final – retail price which accrues to each category of participants in an agri-marketing system, other than the farmer, in return for the marketing services which they perform (Crawford, 1997).

Results and Discussion

Many buyers (165) and sellers (120) were seen in the markets. There exists free entry and exit of sellers in the market and the bananas sold were not differentiated from one another. Banana market associations are not existing in the State and there is no price collusion nor monopolistic control of the market.

Using the data from table 1, it implies that d = 1305, thus Y = 75660/30 = 2522 Consequently, G = 1543.87/(2 x 2522)

$$= 1543.87/5044 = 0.31$$

Similarly, the Gini coefficient of the retailers is calculated in the same way using the data from table 2, we have

$\bar{d}$ = 181.63, $\bar{Y}$ = 26616/60 = 444kg

Thus, G = 181.63/(2 x 444) = 181.63/880 = 0.21

In the same way, the Gini coefficient of the farmers may be determined using the data from table 3, we have

$\bar{d}$ = 45.71, Y - 4031/30 = 134.37kg

Hence, G = 45.71/(2 x 134.37) = 45.71/268.73

$$= 0.17$$

The Gini coefficients of 0.31, 0.21 and 0.17 respectively were obtained for the wholesalers, retailers and farmers (see tables 1, 2 and 3). In absolute term, it implies that there is a low degree of inequalities or that the bananas are in a little way un-equally distributed among the middlemen and farmers. Comparatively, inequalities exist more among the wholesalers than among the retailers. In essence, it shows that more quantities of bananas are being controlled by one group or the other among the wholesalers. The Gini co-efficient of 0.17 among the farmers indicates a lowest degree of inequalities relative to that of the middlemen. This implies that the banana output by farmers are nearly evenly produced by the groups from small plots and kitchen or backyard gardens. There is, therefore, no large commercial banana plantation identified in the study area.

Table 1 shows that 33% of the wholesalers control 91% of the total quantity of bananas – distributed by the entire wholesalers as against 30% of them that controls just 1% of their bananas. The first group is an extreme one and indicates extreme inequality. The group stays too far away from the Lorenz curve and the line of perfect equality and trying to high jack wholesale banana trade.

On the other hand, 60% of retailers controls 34.1% of their bananas leaving 40% of the retailers in various groups in control of 65.9% of their bananas. Bananas are therefore, more evenly distributed among the retailers than among the wholesalers. Hence, the wholesalers have greater Gini coefficient of 0.31 (see table 1 and the Lorenz curve in figure 1). The Lorenz curve and points of the retailers and farmers are therefore, nearer the line of perfect equality than those of the wholesalers.

The implication of all the above analysis is that the banana market structure in the State is almost optimum (nearly the best or almost in a favourable condition) even though that 33% of the wholesalers control a great quantity of the wholesale bananas.

TABLE 1: Distribution of Banana Among Wholesalers: Decomposed by Quantity Range in Kilogrammes/Month

1	2	3	4	5	6	9			
Qty/kg	$f(x_i)$	%	$N(X_i)$	$1 - N^1(X_i)$	$\sum f(X_i)$	%	$\overline{X_i}$	$X_{i+1} - \overline{X_i}$	$\overline{d}$
01-100	9	30	0.30	0.70	351	1	39	146	30.66
101-200	1	3	0.03	0.97	185	0.3	185	93	20.56
201-300	1	3	0.03	0.97	278	0.4	278	-278	-64.05
301-400	0	0	0	0.36	0	0	0	462	106.50
401-500	2	7	0.07	0.93	924	1	462	92	19.32
501-600	1	3	0.03	0.97	554	1	554	139	29.40
601-700	1	3	0.03	0.97	693	0.73	693	67	13.83
701-800	3	10	0.10	0.90	2280	3	+760	-760	-185.14
801-900	0	0	0.0	0.0	0	0	0	980	238.73
901-1000	2	7	0.07	0.93	1960	3	980	5864	1334.06
Over 1000	10	33	0.33	0.67	68435	91	6844		
Total				1	**75660**				**1543.87 = d**

TABLE 2: Distribution of Banana Among Retailer: Decomposed by Quantity Range in Kilogrammes/Month

1	2	3	4	5	6	9			
Qty/kg	$f(x_i)$	%	$N(X_i)$	$1 - N^1(X_i)$	$\sum f(X_i)$	%	$\overline{X_i}$	$X_{i+1} - \overline{X_i}$	$\overline{d}$
01-100	9	15	0.15	0.70	315	1	39	146	30.66
101-200	11	18	0.18	0.79	1744	6.6	159	80	13.27
201-300	12	20	0.20	0.59	2864	10.9	239	98	23.71
301-400	13	22	0.22	0.37	4374	16.6	337	121	28.21
401-500	7	12	0.12	0.26	3203	12.1	458	81	15.58
501-600	2	3	0.3	0.23	1078	4.1	539	99	17.53
601-700	5	8	0.8	0.15	3188	12.0	638	125	15.94
701-800	2	3	0.3	0.12	1525	5.8	763	84	8.87
801-900	1	2	0.2	0.08	924	3.2	847	77	6.93
901-1000	1	2	0.2	0.08	924	3.5	924	700	51.52
Over 1000	4	7	0.7	0.00	6495	24.6	1624	0	0
Total	**60**	**100**	1		**26616**	**100**			**181.63**

TABLE 3: Distribution of Banana Among Farmers: Decomposed by Quantity range in Kilogrammes/Month

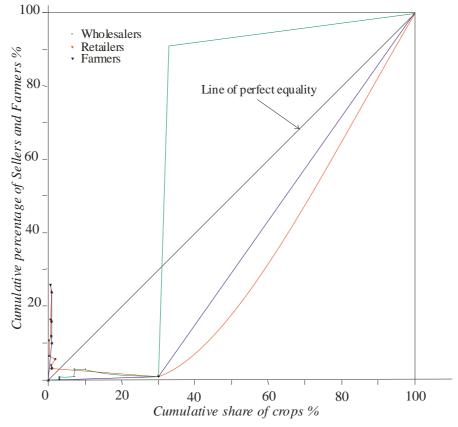| 1	2	3	4	5	6	9			
Qty/kg	$f(x_i)$	%	$N(X_i)$	$1 - N^1(X_i)$	$\sum f(X_i)$	%	$\overline{X_i}$	$X_{i+1} - \overline{X_i}$	$\overline{d}$
01-100	9	30	0.30	0.70	351	1	39	146	30.66
101-200	8	27	0.27	0.73	1032	26	129	117	20.72
201-300	4	13	0.13	0.87	984	24	246	74	6.66
301-400	2	7	0.7	0.93	640	16	320	80	2.33
401-500	1	3	0.3	0.97	400	10	400	0	0
Others	6	20	0.20	0.8	624				
Total	**30**	**1.00**	**100**		**4031**	**100**			**45.71**

Fig. 1: The Lorenz Curve

Banana Market Conduct

Market conduct deals essentially with the behaviour of middlemen and conduct of marketing functions with regard to the formation of association, pricing policies, price collusion and discrimination, sex restrictions and monopoly practices. Aspects of market conduct refer to the pattern of behaviour followed by the banana marketers in adapting to the market situation of the crop (Okeke, 1987).

The middlemen, especially the retailers, on a 100% level, ripen banana in houses locally designed to help manipulate environmental conditions of temperature, ventilation and humidity in attempt to preserve banana three to seven days. There was no banana market union nor price collusion and discrimination in the study area. The banana producer, wholesale and retail average prices of ₦348.00, ₦444.00 and ₦624.00 per kilogramme are competitive enough such that the price mechanism is most likely to transmit considerable signal to the producers who obtained a fair share of the consumer spending. Instead, bananas are demanded and supplied through bargaining process and there is no sex restriction in the marketing of bananas as both males and females are involved. Although inequalities exist between and among the wholesalers and retailers, banana market is not monopolized by any of the marketers.

The implication is that the banana market in the State has a good conduct (behaviour) though, the bananas need to be sold via a standard measure for the saving of time and conveniences of the farmers, sellers and buyers.

Banana Marketing Margin and Market Performance

Information gathered from farmers in the study area gave the average producer price for a kilogramme of Banana as ₦348.00. In the same way, data from the wholesalers interviewed gave an average price of ₦444.00 per kilogramme of banana. Also the retail price, which represents the consumer spending per kilogramme of banana, is ₦624.00. The middlemen marketing cost per kilogramme (Table 5) is ₦98.4. The marketing margin is the consumer spending less the producer price. This implies that the marketing margin is ₦624.00 – ₦348.00 = ₦276.00 The marketing margin includes the marketing cost plus the normal profit or loss. Therefore, profit of the middlemen is the ₦276.00 less ₦98.4 = ₦177.6.

The measures used in assessing the performance of a marketing system are the farmer's/grower's share of the retail price spread; the gross marketing margin or farm retail price and the proportion of a consumer's income which must be spent on food (Crawford, 1997). In view of the above, 56% is obtained as farmer's share of the consumer's spending. This is got by dividing the producer price by the retail price (consumer spending) and multiplying by 100. The remaining 44% is the marketing margin. The proportion of this marketing margin that covers the marketing cost and the profit of the middlemen are respectively 16% and 28%.

Similarly, 65% of the marketing margin goes to the middlemen as net profit while 35% of it stood as its marketing cost. The first is obtained by dividing the profit (₦178.00) by the marketing margin (₦276.00) and multiplying by 100. Finally, 31% of the middlemen profit accrued to the wholesalers as against 69% that went to the retailers. From the above analysis, it is seen that the Banana farmer has a fair share of the consumer spending (56%). The middlemen's profit is high (65%) in consideration of the 35% of the marketing margin that covers the marketing cost. The implication is that the consumers pay a higher price of ₦624.00 just for a kilogramme of Banana at the advantage of the retailers who receive a lion share of the consumer spending per kilogramme of banana.

Banana Marketing Problems

Information obtained from the respondents showed that lack of capital (43%) and lack of modern storage facilities (37%) are the major problems of the wholesalers. Also, lack of capital (67%) and lack of modern storage facilities (12%) are the major problems of the retailers. On the other hand, lack of high yielding and disease resistant varieties (37%) is the greatest problem of the banana farmers. Again, lack of money is the major problem of the consumers.

The implication is that lack of capital/storage facilities, lack of disease resistant varieties and lack of fund were respectively the major problems of the banana middlemen, farmers and consumers.

Recommendations for Policy Decisions

Having analyzed the banana market structure, conduct and performance as well as the problems of the middlemen, farmers and consumers of banana, the following recommendations are made for policy decisions for enhanced production, distribution and consumption of the crop.

1. Sale of bananas in fingers and or without a standard measure seems to be inconveniencing and unnecessary time consuming to the middlemen, farmers and consumers. It will therefore, pay better if policy decisions are made to set up the selling of banana with a standard measure like selling in kilogramme weight. This will be a good banana market orientation strategy to encourage production, distribution and consumption of high quality fruits at the same time save the middlemen, farmers and consumers a lot of time and inconveniences of the bargaining process. This will equally improve banana market conduct, the chances of cheating buyers and enable the middlemen make market projections as well as estimate profit in a marketing outfits.

2. The farmers associations, the Non-Governmental Organizations (NGOs) and the government should arrange to reach out the research institutions like the International Institute of Tropical Agriculture (IITA) to assess the disease resistant and high yielding banana varieties for distribution to the farmers at the right time.

Acknowledgment

References

Adedoyin, S. F. (1984). A study of the research activities of the National Horticultural Research Institute (NIHORT) and the effectiveness of the its information and technology transfer process in Ibadan division. Unpublished M.Sc. Thesis, Department of Agricultural Extension and Rural Sociology, University of Ibadan, Ibadan, Nigeria.

Anyanwu, A. C. (1982). *Agriculture for School Certificate*. Onitsha: Africana Publishers Ltd.

Bayeri, K.P and R Ortiz (1995). Path analysis of yield in desert bananas *Musafrica 8:3-5* . International Institute of Tropical Agriculture. (IITA), Ibadan.

Beth, D. (1989). Yesa, we all love bananas. *Weekly Star*, (March 26), p. 7.

Crawford, I. M. (1997). *Marketing and Agribusiness Texts 2* Rome: Food and Agricultural organisation of the United Nations.

Crouch, J. (1997). Extension of ripening period of musa fruit using calcium infiltration; semperfresh, and Brilloshine 1 coating *Musafrica*, Vol. 11, p. 1.

CTA (1987). *Plantain/Bananas*. London: Macmillan Publishers.

Dixie, G. (1989). Horticultural marketing: *A resource and training manual for extension officers*. FAO Agricultural Service Bulletin. Rome: Food and Agricultural Organization of the United Nations.

FAO (2008). The World Banana Economy Food and Agriculture Organization, http://www.fao.org/docrep/007/y5102e/y5102e04.htm.

F. O. S. (1995). *Annual abstract of statistics*. Lagos: Federal Office of Statistics.

Frison, E. (1997). Towards a musa improvement program *Musafrica*, Vol. 11, p. 5. International Institute of Tropical Agriculture, Ibadan (March).

IITA (1994). Annual Report Ibadana, Nigeria: International Institute of Tropical Agriculture.

Ker, A., J. Aked and S. Ferris (1997). *Musafrica*, Vol. 11, p. 3. International Institute of Tropical Agriculture (IITA), Ibadan.

Nwogu, A. N. (1997). *Musafrica*, Vol. 11, p. 3. International Institute of Tropical Agriculture.

Okeke, E. U. (1987). A functional analysis of food crops marketing by Farmers Multipurpose Cooperative Societies (F. M. C. S.) in Anambra and Imo State of Nigeria. Ph.D thesis, Department of Agricultural Economics, University of Nigeria, Nsukka.

Rangaswamy R. (2006). *A text book of Agricultural statistics* New Age International (P) Limited, Publishers New Delhi, India.

Rivera Rex A. (2004). Philippine Banana Production and Marketing, rarivera8@yahoo.com 30 Lapu Lapu St. Gen. Santos City.

Wardlaw, C. W. (1972). *Banana diseases including plantain*. London: Longman Group Ltd.

Wikipedia (2008). Gini coefficient. Available @ http://en.wikipedia.org/wiki/ Gini_coefficient.