STRUCTURE AND INTEGRATION OF FOOD GRAIN MARKETING IN YOLA AREA, ADAMAWA STATE

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Abstract: The Study examined the structure and integration of food grains marketing in Yola Area, Adamawa State. Specifically the socio-economic characteristics, market structure and market integration were determined. Primary data on food grain marketing in the study area were collected from 117 respondents who were randomly selected. The data was analysed using Lorenz Curve, Krishnaswany coefficient of inequality and Parity Price analysis model statistical techniques. The results show that majority of the respondents were young, male, with few members in their household, had attained one level of education or the other, with relatively less years of experience and low capital base. The Lorenz Curve was close to Line of Equal Distribution (LED) and the coefficient of inequality was 0.3 revealing high degree of equality in food grain marketing, the Parity Prices revealed profit gain in all the grains considered. Hence, it was recommended that young people are urged to join food grains marketing and stay longer to gain experience; also transportation and storage facilities should be improved to maintain flow of grains in the market.

Keywords: Food grains, Krishnaswany coefficient, Lorenz curve, Parity price.

Introduction

To a layman, a market would simply refer to any open space where commodities are bought and sold. However, "market exist where buyers and sellers can be in touch with one another which does not necessarily involve meeting face to face",(Adegeye and Dittoh, 1985). Markets and marketing are two different concepts; marketing as defined by Olukosi and Isaitor (1990) are activities that involve all the legal, physical and economic services which are necessary to make products from the farm available in the form, place and time required by the consumers. It also involves the price which the consumers are willing to pay for such products. Marketing is of high importance to agriculture, thus, before we think of production, we must first of all think of an available market for such a product. The authors further stated that, the difficulty with the global food situation appears to be not how big a pie we can bake, but how to cut and share the pieces. Agricultural production and food marketing must develop hand in hand because they are partners in a progressive system.

Food grain refers to grains like rice, maize, wheat, millet and sorghum. They are mostly from the *graminaeae* family and are commonly known as cereals (EST, 1997). These grains form part of the staple food in Nigeria and the world at large.Market and marketing activities are very essential for the distribution of these food grains to the final consumer. Abalu (1986) observed that, the marketing sub-sector is very essential in the overall process of agricultural and economic development in Nigeria. However, the success of this strongly depends on the structure and performance of the marketing system.

Market structure can be defined as the characteristics of the organization of a market, which influences strategically the nature of competition and pricing within the market (Olukosi and Isitor, 1990). They further explained the factors considered important in determining market structure to include the number and size of buyers and sellers, the degree of product differentiation, the ease of entry and exit of buyers and sellers and knowledge of costs and prices. Olukosi and Isitor also viewed that market structure essentially relates to the degree of competitiveness of a market, which shows whether the number of producing firm are large, equal or dominated by some groups. Likewise, Adekanye (1988) noted that, market structure directly affects the degree of competition and efficiency of price formation. She noted that the organizational structure for marketing agricultural products is often very similar for the different crops that will not fit into any general frame work. The main differences are; in the quantitaies of each product moving through the conventional markets as opposed to some exchange points like roadside station or assembler's house. Since the marketing structure of an industrial organization affects its conduct and subsequently performance, thus the structure determines performance with conduct acting as a link (Kolawale, 1974).

Market integration is a term that is used to identify a phenomenon in which markets of goods and services that are somehow related to one another experience similar patterns of either increase or decrease in terms of prices of the products. The term can also be referred to a situation in which the prices of related goods and services sold in a defined geographical location begin to change similar patterns to one another (Fackler and Goodwin, 2002). Research on market integration and price transmission, both spatially and vertically, has applied different quantitative techniques and has highlighted several factors that impede the pass through of price signals (Balcombe and Morrison, 2002). Barrett, (2001) revealed that, agricultural policy instruments such as import tariffs, tariff rate quotas, and export subsidies or taxes, intervention mechanisms, as well as exchange rate policies insulate the domestic markets integration. The objectives of the study were to; identify the socio-economic characteristics of the respondents, examine the structure of food grain marketing and analyse the integration in food grain marketing.

Materials and Methods

The study was carried in Yola area of Adamawa state Nigeria, with geographical area of 1,213 kilometer square and an altitude of 15.9 meters above sea level. The study area lies between Latitude 7^0 and 11^0 North of the Equator and between Longitude 11^0 and 14^0 E of the GMT with

temperature range of 39^0C-45^0C and population size of 525, 249 people (Adebayo, 1999; NPC, 2006). The respondents used were food grains marketers in Yola area of Adamawa state. Primary data were collected from the respondents through the use of structured questionnaire, 120 respondents were selected according to the proportion of the market size, 50 in Jimeta markets, 40 in Yola market and 30 in Girei market. Out of the 120 questionnaire, 117 were retrieved, cleaned and used for the analyses. The data collected for the study were analysed using descriptive statistics, Lorenz Curve as shown in Fig. 1, Krisnaswany (1975) coefficient as presented in equation 1 and parity price model in equation 2. The market structure was also analysed using Lorenz Curve and Krisnaswany coefficient and is given as:
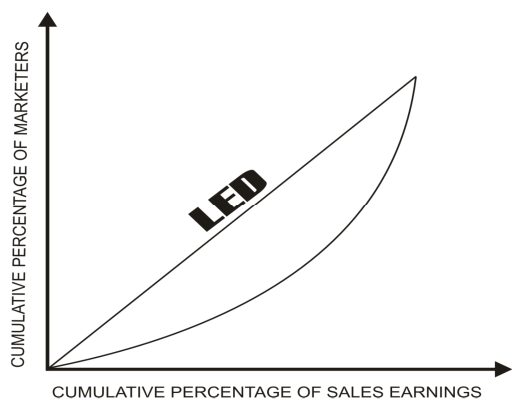
LED = Line equal distribution
Fig. 1: Lorenz curve of market structure

The Krisnaswany coefficient of inequality was used as a more precise measure. The formula is given as:
$$L = 1 - \sum_{i=1}^{n}(Pi - Pi - 1)(Qi + Qi - 1) ... ... 1$$

P_i = Cumulative percentage of marketers category up to and including the nth class.
Q_i = Cumulative percentage of their sales earnings up to and including the nth class.
The market integration was determined using parity price analysis model as shown by the formula below:

The parity Price Model:
This is given as:

$$PP = SP - [TC + HC] ... ... 2$$

Where: PP=Parity price (₦); **SP**=Selling price (₦); **TC**=Transportation Cost (₦); **HC**=Handling charges (₦)

Results and Discussion
The results were categorized into socio-economic characteristics of the respondents, marketing activities, market structure and market performance in the study area. Table 1 shows the distribution of respondents according to their personal characteristics in the study area. Both the frequency and the percentages distribution were shown in the table. The majority of the marketers were male in their active and productive age. This revealed that marketing food grains need strong people to reach rural markets to buy food grain and also for casual movement of bags in their stores.

Majority of the marketers (88%) were having less than ten members in their households, showing that no much distraction on the marketers in running their food grain business from the family. Most of the respondents (63.2%) had attained one educational level or the other, which provide the marketers with skills and knowledge to enhance their marketing activities thereby ensuring efficiency in market performance as well as improving the standard of living of the marketers. Good number of the respondents (58%) had experience of less than ten year, which shows that they need more experience to enhance their efficiency in food grain marketing, because, the more the experience, the more efficient the marketing functions are expected to perform.

Table 1: Socio-economic characteristics of the respondents in the study area

Socio-economic characteristics	Frequencies	Percentage
Age		
≤23	3	2.6
24-30	36	30.8
31-36	20	17.1
37-43	28	23.9
44-50	23	19.7
>50	7	5.9
Total	**117**	**100.00**
Gender		
Male	80	68.4
Female	37	31.6
Total	**117**	**100.00**
Family size		
1-10	103	88
11-20	11	9.4
>20	3	2.6
Total	**117**	**100.00**
Level of education		
None	43	36.8
Primary	35	29.9
Secondary	26	22.2
Post-Secondary	5	2.3
Others	8	6.8
Total	**117**	**100.00**
Years of experience		
≤10	68	58.1
11-20	38	32.5
21-30	9	7.7
>30	2	1.7
Total	**117**	**100 .00**

Source: Field Survey, 2013

Table 2 shows the marketing activities which indicated that 65.8% of the marketer had used their personal saving in food grain marketing, loan supplements their personal savings and also to expand the volume of food grain marketed; as the more capital the marketers have; the more food grain will be supplied to the market. Majority of the participants (85%) in the food grain marketing were merchandised (Wholesalers and retailers), showing that they dominated marketing activities as those that have their capital in the market flow. Most of the food grain flow in the market was held by the wholesalers (51.5%), indicated that they have larger capital in the food grain flow as well as holding the stock to release in the time of demand.

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Table 2: Marketing activities of the respondents in the study area

Marketing activities	Frequencies	Percentage
Credits utilization		
Personal Savings	77	65.5
<₦50,000.00	17	14.5
₦50,000.00 - ₦100,000.00	13	11.1
101,000.00 - ₦150,000.00	3	2.6
₦151,000.00 - ₦200,000.00	2	1.7
>₦200,000.00	5	4.3
Total	**117**	**100.00**
Market Participants		
Producers	10	8.5
Wholesalers	43	36.8
Retailers	42	35.9
Speculators	8	6.8
Processors	12	10.3
Itinerant Buyers	2	1.7
Total	**117**	**100.00**
Quantity of food grains sold by participants		
Wholesalers	1662	51.5
Retailer	795	24.8
Producers	254	7.9
Processors	164	5.1
Speculators/Itinerant Buyers	333	10.4
Total	**3208**	**100.00**

Source: Field Survey, 2013

Market structural analysis

The market analysis was carried out using the Krishnaswany coefficient of inequality and Lorenz Curve to determine the sellers' concentration in the markets.

Table 3: Analysis of market concentration among food grain marketers

P_I	P_I-1	Q_I	Q_I-1	A	B	AB
6.0		22.0		6.0	22.0	0.1
20.9	6.0	43.8	22.0	14.9	65.8	1.0
35.7	20.9	61.5	43.8	14.8	105.3	1.6
52.3	35.7	76.9	61.5	16.6	138.4	2.3
60.1	52.3	82.2	76.9	7.8	159.1	1.2
70.4	60.1	87.8	82.2	10.3	170.0	1.8
84.5	70.4	94.7	87.8	14.1	182.5	2.6
100	95.2	100	99.1	4.3	199.0	1.0
0	100	0	100	-100	+100	13.7

Source: Field Survey, 2013

In determining the market concentration as indicated in Table 3, it was expected that the result obtained should lie between zero (0) and one (1). The closer the result obtained is to zero, the less concentrated the market; while the closer it is to one, the more concentrated the market. The analysis gave a coefficient of the market concentration of 0.3, which indicated that there was high degree of equality between food grain distributed and marketer's sales earning. This means that the market is less concentrated. The Lorenz Curve (Fig. 2) was also used to illustrate the concentration of the market. It is in positive correlation with that the Krishnaswany coefficient of inequality; the closer the curve to the LED, the less concentrated the market, while if the curve swings far away from the LED, the higher the concentration of the market. The curve shows a slight swing away from LED, an indication that the market was less concentrated. This is established by both the Krishnaswany coefficient of inequality and Lorenz Curve.
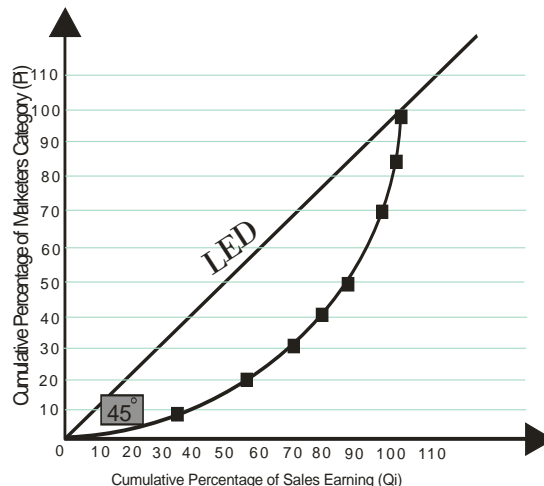
Fig. 2: Lorenz curve of food grain marketers

In examining the integration of the market, the parity price was calculated for each of the food grain. The parity prices were compared with the cost prices of each food grains as presented in Table 4. As shown on the Table 4, for maize, the parity price was sixteen times higher than that of cost price. For rice the cost price is seventeen times higher than that of the cost price; ranging between ₦1,800.00 to ₦3,000.00, while virtually all the cost prices fell below this range. Also, for sorghum the parity price is nine times higher than the cost price with the lowest price at ₦1,400.00, while the highest was ₦4,800.00. Lastly, for millet the parity price is thirteen times higher than that of the cost price. All the grains indicated that the parity prices are higher than their respective cost prices. This revealed that, more food grains flows into the market, hence, profit is generated.

Table 4: Parity price analysis

Maize		Rice		Sorghum		Millet	
PP	**CP**	**PP**	**CP**	**PP**	**CP**	**PP**	**CP**
1180	1100	1780	1200	980	900	980	800
1020	1500	1670	2500	1960	1600	1780	1000
2060	1900	2460	2000	1480	1600	2015	1600
1800	1000	2000	1500	1950	1600	1950	1700
1955	1600	2155	1800	1590	1000	2460	1800
2960	2700	2700	2700	1575	900	945	950
1845	1600	2500	2000	1980	750	1790	700
3470	1700	1890	1500	1000	700	1810	1500
1980	1500	1790	1400	690	700	1520	1600
1890	1600	1800	1400	2020	1600	1880	800
1425	1300	1910	1000	1355	1300	1900	1700
2020	1600	1900	1500	1750	3000	2220	2000
1755	1600	1770	1500	1490	1500	2400	2000
1620	1400	1940	1600	2020	1450	830	2500
1520	1500	1900	1800	1990	2000	1620	1200
2900	1500	1920	1600	3000	4000	2380	800
2900	1500	1600	1200	2490	2500		
1375	1200	2470	1500				
3490	3500	3990	4000				
3670	2500	3570	3600				
2990	3000	2970	3000				
3590	3600	2980	1000				
2970	3000						
2465	2500						

CP = Cost Price (₦); **PP** = Parity Price (₦); Source: Field Survey, 2013

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Conclusion

The study shows that majority of the marketers were male in their active age with less than ten members in their households. Also, most of them had attained at least one level of education, but had less than ten years experience. Their marketing activities indicated that most of the respondents were merchants' wholesalers that use their personal savings. Lorenz curve and inequality coefficient indicated that the market structure was less concentrated. The market integration revealed the flow of more food grains into the market, hence profit is generated. Based on the findings of the study, improvement of food grain consumption, motivation of food grain marketing and policy making, young people are encouraged to involve in food grain marketing to be gainfully employed, the marketers need to last long in the system for higher experience which will give them more gain, transportation facilities should be improved by government and other concerned bodies to ease the marketing flow and storage facilities should be improved to strengthen the market structure.

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