Determination of Conduct, Performance and Structure of Cowpea Marketing in Yola North and South Local Government Areas of Adamawa State, Nigeria

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Abstract: The research determined the structure and performance of cowpea marketing in Yola North and South Local Government Areas of Adamawa State, Nigeria. Primary data was used for the study which was generated using structured questionnaires that were administered on 75 respondents. The cost and returns of cowpea wholesaler revealed that, wholesale cowpea marketers were efficient as shown by the positive sign and magnitude of the gross margin and net incomes while, that of the retailers were lower than those of wholesalers. The results of the marketing margin indicates that wholesalers had lower margin than that of retailers, although the overall marketing margin which was computed to be about 11 percent was higher than that of wholesalers. Therefore, the research concluded that marketing of cowpea in the study area is profitable as determined by the positive sign and magnitude of the gross margin. However, a low marketing margin was obtained in the study, which is an indication of pricing efficiency by the marketers. Hence, market structure of wholesalers of cowpea in the study area was competitive, while that of retailers was not. The study therefore recommends that, Cowpea marketers should have easy access to affordable credit facilities so as to expand their marketing activities. Modem storage facilities and the use of airtight containers should be encouraged among marketers for sustainable cowpea storage so as to improve it shelf life.

Keywords: Determination, Conduct, Performance, Structure, Cowpea, Marketing.

I. INTRODUCTION

Nigeria is a country located in the Western part of Africa. In 2013, it has population of over 173 million people living in the country as estimated by the Global Population Statistics (www.geohive.com). It has a total area of about 923,768 square kilometers and land area of 910,768 km^2 and 13,000 square kilometer of water. The climate of the country varies from equatorial in the south to tropical in the center and arid in the north. Thirty three percent of the country's land area is arable land with about 3.14% as permanent crops while the remaining and majority constituting 61.84 percent occupied by others, Fidelity Bank of Nigeria Plc (FB Plc, 2011); .Oyelade, *et al.* (2013). According to NBS (2012), Nigerian agricultural sub-sector contributes about 56.8 percent Domestic Product (GDP). Also, it employs about 70 per cent of the labour force and provides over 80 per cent of the foods of the sector's performance and contribution to GDP declined in 2012 to 36.2 percent which was due to the flooding crisis and other related problems, all of which contributed to the losses in the country's agricultural productivity. Girei *et al*, (2013). Despite the contribution of agriculture to the Nigerian economy, the Nigerian agriculture sub-sector. It is still at the subsistence level with bulk of the food still being cultivated by the small scale entrepreneurs who are constraints by myriads of factors ranging from inadequate and high cost of inputs, general insecurity prevailing in the country especially the rural areas where the food are being produced, poor infrastructure in terms of access roads, storage facilities, low level of education, inadequate to high cost of capital, lack of standard price system among others. According to the rebased GDP of Nigeria as reported by the National Bureau of Statistics (NBS, 2014) agriculture contributed 23% of the GDP with crops providing majority of the share. Therefore, the development of the agricultural sector is of great importance especially for increasing food supply that will ensure food security, employment generation, wealth creation, provision of raw material and foreign exchange Fabusoro and Agbonlahor (2002).

As revealed by Afolami (2001) cowpea is an important staple food in Nigeria which is being produced for domestic consumption. It is a veritable source of protein which may be capable of providing remedy to the protein-

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carbohydrates nutrition imbalance of the Nigerian populace. Similarly, it is considered as an industrial raw material, income earner, livestock feed as well as its capability of improving and reconditioning of the fertility of soils (Quin, 1997). Cowpea production is increasing in Nigeria, though its production is concentrated in the northern part of the country. Nigeria is a major producer of cowpea in the world with production estimate of 1.7 million metric tons from about 4 million hectares (Singh et al., 1997). In Nigerian especially Adamawa State, the crop is virtually being cultivated all part of the state.

Awuama (2005) reported that between 1996 and 1999, they have estimated that about 147,380 tons of cowpea was produced in Adamawa State from about 203,520 hectares which gives an average yield of 181kg/ha. Despite the major contribution being made by small scale farmers towards agriculture, they still remain the poorest segment of the Nigerian population with weak capital base which makes it difficult for them to invest much on their farms Funke *et al*, (2012). Similarly, the vicious circle of poverty among the small scale farmers has led to the un-impressive performance of agriculture as reported by Ajibefun (2002). Taking the above into consideration, per capita food production has not been able to meet up with the expanding demand. All this may be due to the poor market and structure in the country. Several food crops have gain recognition by the Federal Government of Nigeria where efforts were made in the past and present towards establishing programmes and projects including policies towards improving, increasing and expanding its productivity. Cowpea (*Vigna unguiculata*) (L walp) which is a relatively low cost, high quality protein crop, and a major cash crop for many farmers is neglected therefore adopting improved cowpea production methods as well as availability of investible funds to the farmers will increase production and income generation in Nigeria.

Futuless *et al.* (2010) reported that globally, about 14 million hectares were under cowpea cultivation with about 5 million of the total being in Nigeria. Cowpea is very is very important and has wide range of uses. It can be cook along or alongside rice and vegetable. Similarly, it can be processed into cake through frying. The shaft/leaves are also widely being use as animal feeds in animal fattening among others. Similarly, cowpea is gradually becoming prominence especially in its economic values in Nigeria more importantly in the southern part of the country. Though, despite the fact that the crop is prominently in this region, its production is done in the semi-arid areas as reported by Petu-Ibikunle et al. (2008).It is therefore against this background that necessitates the study to assess the conduct, structure and performance of the crop in Adamawa state. The production and marketing of cowpea is steadily expanding in West Africa. But a better understanding of consumer preferences is essential to market development, Mishili, *et al.* (2009). The high level of acceptability of cowpea resulting to its nutritional values of several uses, gives appreciable returns from its marketing and thereby ensuring sustainability to the marketing system through enhanced revenue generation to both the producers and marketers. However, the challenge facing the marketers is how to satisfy the consumer's wants at an affordable price, reasonable profit the will be socially acceptable to all parties, Kotler (1990). Adamawa state is one of the major cowpea producing states in Nigeria; this is evident the availability of the product in most markets and also the consumption rate by most households, Adejobi and Ayinde, (2005).

Cowpea marketing has high potential of increasing farmers' and trader's income, thereby contributing to poverty reduction and food security. Studies conducted on marketing of food and cash crops revealed that, a number of factors including inadequate capital, pest and diseases, poor logistics marketing outlets and management difficulties were some of the major problems associated with cowpea production and marketing Modu *et al*, (2010). Thus, majority of these studies conducted do not consider cowpea as food crop as well as income generating enterprise. This study therefore, was conducted to assess the conduct, performance and structure of cowpea marketing in the study area. The research also examined the extent of sellers concentration and nature of competition, compared the difference between the price paid by consumers and that received by sellers and determined the difference between the total revenue (TR) and total variable cost (TVC) of the cowpea farmers. The study answered the questions as to the difference between price received by producers and that paid by consumers? And also the cost and returns associated with cowpea marketing? associated with cowpea marketing?

II. HYPOTHESIS

Ho: there is no relationship between the price perceived by cowpea farmers and the amount paid by consumers in the study area.

Ho: there is no relationship between the cost and returns associated with cowpea marketing and the quantity of cowpea produce in the study area.

III. METHODOLOGY

3.1. Study Area

The research was carried out in Yola North and South Local Government Areas of Adamawa State Nigeria. It has an estimated population of about 389,854 people as reported by National Population Commission (NPC,2006) and with a projected population of about 473,354 based on the growth rate of 2.8% per annum as at 2014. (Adebayo,1999). The two local government areas share boundaries with Girei to the North, Demsa and Belwa to the west and Fufore Local Government to the Eastern and Southern parts of the state as reported by Adebayo 1997. It has a land mass of about 1,213km^2. The area is located between latitude 9° 14'N and 12° 28'E with relative humidity ranging between 20-30%. The area lies within the guinea savannah climatic zone of Nigeria with distinct dry and rainy seasons. The rainy season commences in April and ends in late October, while the dry season starts in November and ends in April (Adebayo, 1999). The two local government areas share boundaries with Girei to the North, Demsa and Mayo-Belwa to the west and Fufore Local Government to the Eastern and Southern parts of the state as shown in Adebayo, (1997).

3.2. Sources of Data

Primary data was used for this study which was generated using structured questionnaires that were administered on randomly selected 75 respondents. The primary data was complemented using secondary information obtained from the internet, review of related documents as well as interaction with relevant stakeholders.

3.3. Sampling Techniques

Three major markets were considered for this study namely; Jimeta main market and kasuwar gwari from Yola North and Yola main market in Yola south. These markets were purposely selected based on the high concentration of cowpea marketers Respondents were selected using simple random sampling techniques in proportion to the size and number of cowpea marketers. A total of 75 cowpea marketers were selected with 35 respondents from Jimeta main market, 15 from Kasuwar Gwari and 25 from Yola main market. The sampling frame of the selected markets formed the basis for the selection, such that about 40% of the marketers were sampled

Table1.1. *Distribution of marketer's category in the selected markets*

Marketers Category and Markets	Total Number of Marketers	Number of Sampled Marketers	Percentage
Wholesalers			
Jimeta main market	35	15	19.74
Kasuwar Gwari	13	06	7.890
Yola main market	28	10	13.16
Sub-Total	76	31	40.79
Retailers			
Jimeta main market	50	21	18.42
Kasuwar Gwari	24	10	8.770
Y ola main market	40	13	11.40
Sub-Total	114	44	38.59
Grand Total	190	75	

Source: *Field Survey, 2012*

3.4. Methods of Data Analysis

Inferential statistics using Gini Coefficient and Marketing Margin were employed and used for the analysis of the generated data. The Gini Coefficient was used to determine the extent of seller's concentration and nature of competition in the study area. It is a measure of statistical dispersion which is prominently used as a measure of inequality of income distribution It is defined as a ratio with values ranging between zero and one. Low Gini coefficient indicates more wealth distribution while the high the value of the Gini coefficient, the more unequal the distribution is. Similarly, zero Gini coefficients correspond to perfect equality with a value of one corresponding to perfect inequality. This tool was used by Giroh *et al*, (2010); Funke *et al*, (2012); Girei *et al*, (2013) , and is expressed as below;

GC = I-∑XY

Where:

GC = Gini coefficient

X = Percentage share of each class of cowpea seller

Y= Cumulative percentage of cowpea marketers.

∑= Summation sign.

3.5. Marketing Margin

Marketing Margin was used to compare the difference between the price paid by consumers and that received by sellers (Olukosi *et al.*, 2005) and it expressed as:

Mm = $\dfrac{Sp - Cp}{Sp}$ x 100

Where:

 Mm = Marketing Margin of sugarcane in Naira

Sp = Selling Price in Naira

Cp = Cost Price in Naira

3.6. Gross Margin Analysis

Gross Margin (GM) by definition is simply the difference between the total revenue (TR) and the total variable cost (TVC) as expressed by Segun-Olasanmi *et al*, (2010); Modu, *et al, (2010);* Girei *et al*, (2013) and presented by the equation below;

GM = TR - TVC

Where:

 GM = Gross Margin (naira/ton
 TR = Total revenue in naira per ton.
 TVC = Total Variable cost in naira per ton.

IV. RESULTS AND DISCUSSION

Cost and returns of wholesalers associated with cowpea marketing in Yola metropolis. Table 1.2 below is the cost and returns of cowpea wholesaler. The table reveals that, the gross margin and net income of wholesalers was estimated to be   ₦2, 854.78 and ₦1, 527.55 per ton respectively. While the total variable cost was estimated to be ₦111, 838.58 per ton with amount spend on purchase of cowpea from producers accounted for 96.79 percent of total variable cost. The total fixed cost per ton was ₦11, 327.23. The total revenue was estimated to be ₦124, 693.36. However, this finding has revealed that cowpea marketers practicing wholesaling are efficient in the marketing of the commodity by virtue of the positive sign and magnitude of the gross margin and net incomes. This makes cowpea highly valued and profitable in the study area.

Table1.2. *Cost and returns of wholesalers of cowpea per ton in naira*

Items	Amount (N/ton)	Percentage
Varia#ble Cost		
Cowpea (purchases)	108, 244.85	96.79
Transportation	2, 555.38	2.280
Sales tax	218.10	0.190
Loading/offloading	566.02	0.190
Commission agent	160.89	0.501
Security	93.36	0.09
Total variable cost	111, 838.58	100
Fixed Cost		

Rent	11, 327.23	100
Total fixed cost	11, 327.23	100
Total cost	123,165.81	
Returns		
Total revenue (sales)	124, 693.36	
Gross margin	12, 854.78	
Net income	1, 527.55	

Source: *Field Survey, 2012*

4.1. Cost and Returns of Retailers Associated with Cowpea Marketing Yola Metropolis

Table 1.3 below also shows the cost and returns associated with cowpea marketing in the Yola metropolis. It reveals that, gross margin of retailers per ton was estimated at ₦ 9, 285.87 and a net income of ₦ 855.38 per ton. The total variable cost was found to be ₦121, 341.93, while the amount expended on purchasing cowpea attributed ₦ 97.09 percent of the total variable cost. The total fixed cost was estimated to be ₦ 8, 430.49, giving a total cost of ₦ 129, 772.42. The result therefore indicates that the gross margin and net income of retailers are lower than those of wholesalers. This is because average marketing cost of wholesalers tends to be lower than that of retailers. The result further indicates that, cowpea marketing in the area is profitable by the positive sign of the gross margin.

Table1.3. *Cost and returns of retailers of cowpea per ton in naira.*

Items	Amount (N/ton)	Percentage
Variable Cost		
Cowpea (purchases)	117,807.17	97.09
Transportation	2,339.01	1.93
Sales tax	255.16	0.12
Loading/offloading	597.98	0.48
Commission agent	226.91	0.19
Security	115.70	0.10
Total variable cost	121,341.93	100
Fixed Cost		
Rent	8,430.49	100
Total fixed cost	8,430.49	100
Total cost	129,772.42	
Total revenue (sales)	130,629.80	
Gross margin	9,285.87	
Net income	855.38	

Source: *Field Survey, 2012*

4.2. Marketing Margin of Respondents

The marketing margin of cowpea for marketers in the study area as revealed in Table 1.4 was estimated at 10.78 percent for all the marketers, while for only retailers and wholesalers, estimated at 11.78 and 10.11 percent respectively. This indicates that the marketing margin of wholesalers is lower than that of retailers, although the overall marketing margin which is 10.78 percent is higher than that of wholesalers. The low marketing margin indicates that marketers do not make excessive profit in cowpea sales. Hence, consumers of the commodity did not suffer exploitation by middlemen.

Table1.4. *Marketing margin of cowpea marketers in the area.*

Items	Wholesalers	Retailers	All marketers
Supply price	11,981.82	11,132.26	11,650.67
Consumer price	13,329.55	12,619.35	13,036.00
Market margin	10.11 %	11.78%	10.78%

Source: *Field Survey, 2012*

4.3. Market Concentration of Cowpea Marketers (wholesalers and retailers)

The result from table 1.5 below shows that, about 35 percent of the marketers had weekly sales of about ₦50, 000.00, while about 33 percent had weekly sales of between ₦ 50, 001- ₦ I00, 000. Similarly, about 7 percent each had weekly sales of between ₦ 100, 001- ₦ 150, 000 and ₦ 150, 001- ₦ 200,000 respectively. Consequently 10 percent of the respondents had weekly sales of between ₦ 200, 001- ₦ 250, 000 with about 8 percent had weekly sales of above ₦ 250, 000. The mean weekly sales in the study area are estimated at ₦ 13, 446.27.

Table1.5. *Distribution of weekly sales of cowpea wholesaler marketers*

Sales (₦)	No of Marketers	Percentage of Marketers(X)	Cumulative Percentage (CF)
1 - 50,000	26	35	35
50,001 - 100,0025	25	33	68
100,001 - 150,000	5	7	75
150,001 - 200,000	5	7	82
200,001 - 250,000	8	10	92
Above 250,000	6	8	100
Total	75	100	

Source: *Field Survey, 2012*

The data obtained from the study as revealed in table 1.6 below shows that, a Gini coefficient of 0.4690 obtained from the analysis. This is a demonstration that the market is competitive, characterized by large number of buyers and sellers such that the action of any buyer or seller would not have any perceptible influence on the marketers. Competitive market and low concentration of an industry indicate low market power held by firms.

Table1.6. *Gini Coefficient of weekly sales of cowpea wholesaler marketers*

Total Value of Weekly Sales	Percentage of Total Sales	Cumulative Percentage (Y)	∑XY
32,658	3.30	3.30	0.0116
68,920	6.80	10.1	0.3333
116,200	11.5	21.6	0.0151
185,200	18.4	40.0	0.0280
231, 875	23.0	63.0	0.0630
372, 917	37.0	100	0.0800
1, 008, 470	100		0.5310

Source: *Field Survey, 2012*

Mean value of weekly sales = ₦13, 44.27

Gini coefficient   = 1 - 0.5310   = 0.4690

4.4. Market Concentration of Retailers

The result in Table 1.7 shows that, 18.2 percent of the retailer had weekly sales ranging from ₦ 50, 001- ₦ 60, 000; while 4.5 percent each has average weekly sales of ₦ 80, 001- ₦ 90, 000 and ₦ 90, 001- ₦ 100, 000 respectively. About 13.6% had average weekly sales of W40, 001-W50, 000, 11.4% each had average weekly sales of w60, 001-₦70, 000, and ₦ 70, 001- ₦ 80, 000, respectively 9.1 % had average weekly sales of ₦ 11, 000 - ₦ 20, 000 and above ₦ I00, 000 respectively. The mean value of the weekly sales is estimated to be ₦ 15, 854.36 with a Gini coefficient of 0.6686, which is appreciably high, an indication of high market concentration

Table1.7. Distribution *of Weekly Sales of Cowpea by Retailers in the study area*

Sale (₦) Retailers	No of Retailers	Percentage Retailers (x)	Cumulative Percentage (CF)
11,000-20,000	4	9.1	9.1
20,001-30,000	5	11.4	20.5
30,001-40,000	3	6.8	27.3

40,001-50,000	6	13.6	40.9
50,001-60,000	8	18.6	59.1
60,001-70,000	5	11.4	70.5
70,001-80,000	5	11.4	81.9
80,001-90,000	2	4.5	86.4
90,001-100,000	2	4.5	90.0
Above 100,000	4	9.1	100
Total	44	100	

Source: *Field Survey, 2012*

Table1.8.*Gini Coefficient of Weekly Sales of Cowpea Retailer Marketers*

Total Value of Weekly Sales	Percentage of Total Sales	Cumulative Percentages (Y)	∑XY
13,875	2.0	2.00	0.0018
27, 000	3.9	5.90	0.006
39,000	5.6	11.5	0.007
46,167	6.6	18.1	0.024
56,500	8.1	26.2	0.047
65,800	9.4	35.6	0.040
74,500	10.7	46.3	0.052
82,500	11.8	58.1	0.026
95,500	13.7	71.8	0.032
196,750	28.2	100	0.091
697,592	100		0.3314

Source: *Field Survey, 2012*

Mean weekly sales = ₦13, 44.27

Gini coefficient   =1- 0.5310 = 0.4690

4.5. Market Concentration of Wholesalers

The result of the analysis explained that, 83.9 percent of the wholesalers accounted for
46.4 percent of the total value of weekly sales earnings, while the remaining 16.1 percent were responsible for 53.6 percent of the total value of weekly sales. Also, 25.8 percent each of wholesalers had weekly sales of N10, 000 – ₦50, 000 and 200,001 - ₦250, 000, respectively. About 9.7 percent each of the respondents had weekly sales range of ₦50, 001 –N100, 000 and ₦150, 001-₦200, 000 respectively. Only 3.2 percent had weekly sales ranging from ₦250, 001- ₦300, 000 with a mean value of weekly sales estimated to be ₦43, 425.81.

Table1.9. *Distribution of weekly sales of cowpea by wholesaler in the study area*

Weekly Sales (₦)	No of Wholesaler	Percentage Wholesaler(x)	Cumulative Percentage (CF)
10,000-50,000	8	25.8	25.8
50,001-100,000	3	9.70	35.5
100,001-150,000	4	12.9	48.4
150,001-200,000	3	9.70	58.1
200,001-250,000	8	25.8	83.9
250,001-300,000	1	3.20	87.1
Above 300, 000	4	12.9	100
Total	31	100	

Source: *Field Survey, 2012*

The empirical finding reveals that the market is competitive with low Gini coefficient of 0.4684 with same on the overall market concentration of marketers entire composed. This explains that, cowpea marketing in the study area

has no barrier to entry; the sellers/marketers concentration is moderate.

Table1.10. *Gini Coefficient of Weekly Sales of Cowpea Wholesaler Marketers*

Total Value of Weekly Sales	Percentage of Sales	Cumulative Percentage (Y)	∑XY
33,075	2.50	2.50	0.0065
71,167	5.30	7.80	0.0076
109,250	8.10	15.9	0.0205
179,833	13.3	29.2	0.0283
231,875	17.2	46.4	0.1197
300,000	22.3	68.7	0.2200
421,000	3l.3	100	0.1290
1,346,200	100		0.5316

 Source: *Field Survey, 2012*

Mean weekly sales = ₦ 43, 425.85

Gini coefficient   = 1- 0.5316 = 0.4684

V. CONCLUSION

The research concluded that, cowpea marketing has been adjudged to be profitable as revealed by the positive sign and magnitude of the gross margin. A low marketing margin was obtained, an indication of efficiency in the pricing system by cowpea marketers. The market structure of wholesalers of cowpea in the study area was competitive, while that of retailers was not. It is therefore suggested that, strong marketing board for cowpea and other related agricultural products should be established to ensure stable and good market prices for the product and control of other marketing activities leading to increase marketing margin and efficient returns from the business. Secondly, to also encourage the marketers to engage in wholesale marketing which is more competitive in the area and to form strong market unions that would give them a good bargaining power for their marketing activities which would subsequently give them increase returns in their markets. This study therefore would serve as a reference point for other researchers in carrying out further research in the field to generate more information that would make cowpea production and marketing more profitable hence, it would also help the government, policy makers and even the farmers in planning and management of cowpea production, processing, storage and marketing in addition it would also help to encourage the development of improved technologies that would increase the shelf life of the commodity and subsequently increase income and revenue generation. Based on the findings obtained, the study recommends: Cowpea marketers should have access to readily affordable credit facilities so as to expand their marketing activities. Modem storage facilities and the use of airtight containers should be encouraged among marketers for storage of cowpea, to increase its shelf life. Cowpea farmers should organize themselves into cooperatives or strengthen the existing ones to enable them reaps the advantage of economy of scale in storage and product transportation. In addition, it will help by facilitating easy acquisition of credit facilities for the advancement of their enterprises.

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