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ANALYSIS OF ONION RETAIL MARKETING IN BENUE STATE, NIGERIA

¹Joshua Ali Ojima, ^{2,*}Ocholi Ali, ³Vande Nguumbur

¹Grand Cayon University Colangelo, College of Business, United States.

²Department of Agribusiness, Joseph Sarwua Tarka University, Makurdi, Nigeria.

³Institute of Food Security Joseph Sarwua Tarka University, Makurdi, Nigeria.

*Corresponding Author

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ABSTRACT

The study examined onion retail marketing in Benue State, Nigeria. Multistage sampling technique was employed to select 150 onion marketers in the study area. Primary data were collected using structured questionnaire administered to respondents. Data collected were analyzed using descriptive statistics, marketing efficiency, Gini coefficient, gross margin and marketing margin. The study revealed that majority (66%) of the respondents were female, 70% were married with a mean age of 37years and a mean income of ₦10,082.56 per basket. The result further showed mean marketing efficiency of 26.76 indicating that the product was efficient, Gini Coefficient of 0.76 indicating that onion marketing was highly competitive, the gross margin was 14325 and gross marketing margin 15.14 indicating that it was profitable venture. Debt, seasonality and robbery constituted the greatest challenge faced by onion retail marketers in the study area. Based on the findings of the study, it was recommended that interest rate at single digit should be given to onion marketers for loans obtained because they have low annual income. Also, more security posts should be provided given that robbery is among the constraints faced by the marketers.

Keywords: Marketing Margin, Marketing Efficiency, Structure, Onion Retailers.

INTRODUCTION

Onion (*Allium cepa*) is a perishable agricultural product that goes bad rapidly if a preservation method is not applied. It is an important vegetable crop belonging to the *Amaryllidacea* family

(Obasi and Kalu, 2019). It is known as “garden” or “bulb” onions and is one of the oldest cultivated vegetables in history. Onion is the most widely used flavouring vegetable crop of major commercial importance throughout the world. It is believed to have originated from tropical central, or western Asia (FAO, 1984, Sulumbe *et al.*, 2015). The leaves are blu-ish-green and hollow, the bulbs are large, fleshy and firm (Azu *et al.*, 2007). Onion is cultivated throughout Nigeria under a wide range of climatic conditions and it can be biennial, triennial or perennial. The total surface area dedicated to the onion in the world has doubled reaching 2.74million hectares (Pelter *et al.*, 2000; FAO, 2002; Obasi *et al.*, 2019). Onion growing is widely distributed among countries and regions in the world. In the last two decades, production figures have shown an upward trend with a production volume of 33 million tonnes in 2003 and 64 million tonnes in 2007. This represents a 51.6% increase, with Nigeria producing 618,000 tonnes in the year 2007 (FAO, 2010). It was also observed in 2011, that 4,277,647 tonnes of onions were produced in Nigeria ranking the fifth largest producer of onion in the world (FAO, 2012). According to Pelter *et al.* (2000), Obasi *et al.* (2019) cultivation of this crop in tropical areas has developed steadily for more than 40 years.

The young green plants are eaten raw in salads, while matured bulb is cooked or eaten raw as it contains essential nutrients which may not be available from other sources (Abdulai and Ibrahim, 2004; Sulumbe *et al.*, 2015). They are used in sauces and as flavouring agents in many dishes (Brewster, 1977; Sulumbe *et al.*, 2015; Ocholi *et al.*, 2021).

It is marketed mainly as a fresh vegetable and is widely used in most households being effective against the common cold, heart diseases, diabetes, osteoporosis, cough and sore throat. It is high in flavonoids which is concentrated on the outer layer of the flesh (Nemeth and Piskula, 2007). It is also rich in vitamin C and a good source of dietary fibre and folic acid. What is more, in Nigeria, it is ranked second most important vegetable after tomato (Ocholi *et al.*, 2021).

The growing of onions cut across different class and culture. Onion’s consumption is spread throughout the year and there is a constant demand for onions all year round. Most of the onion produced in Nigeria come from the Northern Part of the country such as Kano, Sokoto, Bornu, Bauchi, Jigawa, Katsina, Zamfara, (Inuwa, 2001; Obasi and Kalu, 2019).

Obasi and Emenam (2014), Ocholi (2021) asserted that marketing usually begins at the farm when the farmers harvest their products. When harvested, the products cannot be transported to the consumer as the consumer is likely to be located far away from the farmers. To adjust supply to meet demand, storage is required. What is more, when harvested, the product is rarely in a form acceptable for consumers, hence it must be sorted, cleaned and processed in various ways and must be presented to consumers in appropriate quality and quantity for sale. (Asogwa and Okwoche 2012). These activities are carried out by intermediaries (wholesalers and retailers) in the marketing process.

The production and marketing of onions consist of multitude of relationships and arrangements which are based on structure – conduct relationship paradigms at each market level - from producers to consumers. In order to ensure a stable supply of onion throughout the year, the market structure should first be considered taking into account the method of production and distribution.

Agricultural marketing is affected by many issues that pose threat to the flow of goods e.g. distance, cost of transportation, seasonal variation, storage, processing, grading and communication (Alabi and Adebayo, 2008). Similar issues are also pointed out by Hari-son (1985), Illo (2016), Ocholi (2021) who emphasised that marketing problems such as high cost of marketing crops, involvement of many intermediaries to the detriment of farmers and consumers, high physical losses during marketing exposure, insufficient market information to farmers and consumers, lack of grades and standards for the commodities.

As a result of the aforementioned problems, over the years one could spot some inefficiencies in the marketing of onions. Onions are transported from North to North central (Benue State) and the long distance has led to increased cost of transportation. Besides inadequate storage facilities has resulted in the product (Onions) being spoiled by heat and also causing it to germinate before it gets to the final consumers leading to losses thus influencing the marketing efficiency. The marketing of onion in Benue State has not received adequate attention in terms of research especially with regards to the nature of competition, marketing efficiency, disruption of marketing channels and the price fluctuation. Among the various problems afflicting agricultural marketing in developing economies, research attention will continue to be focused on examining levels of efficiency in different dimensions to suggest strategies for improvements.

Based on the foregoing the research was conducted to analyse the Onion retail marketing in the study area. The specific objectives are to:

- describe the socio-economic characteristics of onion sellers in Benue State
- determine the profitability of onion sellers
- examine the marketing margin and market structure of onion sellers
- determine the marketing efficiency
- identifying the problems affecting onion retail marketing in the study area

METHODOLOGY

Population and sampling method

The population of the study comprised all onions sellers in fifteen (15) Local Government Areas in Benue State. The Local Government Areas were Ado, Agatu, Apa, Gwer west. Kastina-Ala, Logo, Obi, Oju, Okpokwu, Tarka, Ukum, Makurdi, Gboko, Gwer East and Ushongo.

For the study, purposive, multistage and simple random sampling method was adopted. In the first stage, a purposive sampling was used to select 10 (ten) Local Government Areas based on prior knowledge indicating a high concentration of onions sellers in the area.

In the second stage, five wards were selected from each of the ten Local Government Areas making a total of fifty wards. In the third stage, three onion sellers from each of the selected wards were selected using simple random sampling, making a sample size of 150 onion sellers.

Data collection and analysis

Primary data were collected using structured questionnaire on the socio-economic characteristics of onion sellers, marketing efficiency, structure, marketing margin, Gross margin and constraint associated with onion marketing in the study area. Prior to the administration of the questionnaires, the questionnaires were pre-tested and necessary corrections were made. Content validity was used to determine the adequacy of the research instrument. In the process, the instrument was thoroughly and independently examined by appropriate experts. The experts gave their critical opinion on the adequacy and relevance of the instrument to the objectives of the study. The observation was harmonised and necessary corrections were made on the instrument before the start of the survey. The test-retest method was used to determine the reliability of the research instrument. Twenty copies of the research instrument were administered twice to the respondents at given intervals. The two results were correlated and a correlation coefficient of 0.920 was obtained indicating high reliability. The data collected for this study were analysed using both descriptive and inferential statistics. The elements of descriptive statistics such as average, frequency and percentages were adopted to analyse the socio-economic characteristics of onion sellers in Benue State while marketing efficiency, Gini coefficient, Gross margin and marketing margin analysis were used to analyse the profitability and efficiency of onion retail marketing in Benue state, Nigeria.

Models' specification

Descriptive statistics

Descriptive statistics involving the use of measure of central tendency such as frequency and percentages was used to describe the socioeconomic characteristics of onion marketers and problems associated with onion marketing.

Gini coefficient

Gini coefficient was used to analyse the market structure

$$G = 1 - \sum X_i Y_i$$

where:

G – Gini coefficient

1 – constant

X_i – percentage of onion sellers in the i th class of traders

Y_i – cumulative percentage of onion sellers in the i th class of traders.

i - 1,2,3.....5

The Gini coefficient ranges from 0 to 1, where 0 implies perfect equality in the distribution (perfect market) and 1 implies perfect inequality (imperfect market), the closer the Gini coefficient is to zero, the greater the degree of equality, and the lower the level of concentration, the more competitive the markets are.

Marketing efficiency

Pricing efficiency was calculated using the formula given by Khols and Uhl (1967) which was used by Olu kosi and Isitor (1990) and later used by Babatunde and Oyatoye (2000) in estimating the marketing efficiency of maize in Kwara State.

The formula specified that:

$$\text{Marketing Efficiency} = \frac{\text{value added by marketing activities}}{\text{Market Cost}} \times 100$$

In order words,

$$\text{Marketing Efficiency} = \frac{\text{Net Margin}}{\text{Market Cost}} \times \frac{100}{1}$$

where the marketing costs (₦) include: purchase cost, transport cost, loading cost, storage cost, market levy, cost of bags/baskets, local government levy.

Gross Marketing Margin

The Gross Margin model specified from the point of view of estimation of total expenses (costs) as well as various returns or revenue within onion marketing period. In line with (Ekerete and Asa, 2014) gross margin model is specified as follows:

$$\text{Gross Margin (GM)} = \text{TR} - \text{TVC}$$

Where,

TR=Total Revenue

TVC=Total variable cost (Loading and offloading cost, rent on store, local government fee, market levy, snacks, transport cost, security, etc)

Total revenue

$$(TR) = Q \cdot P_y \dots\dots\dots(3)$$

Where,

Q = Quantities of onion sold (basket)

P_y = Unit price of onion (basket)

Fixed cost was not included because it was negligible

Gross Marketing Margin analysis

The gross marketing margin for the participants was estimated using the formular given below,

$$GMM = SP - CP$$

Or

Also it can be expressed in percentage as follows:

$$\text{Marketing margin} = \frac{\text{Selling price} - \text{Purchase price}}{\text{Selling price}} \times 100$$

Where:

GM = Marketing margin per bag of onion (Naira/100kg)

Selling price = Selling price per bag of onion (Naira/100kg)

Purchase price = Cost price

Cost price = Cost price per bag of onion (Naira/100kg)

Likert scale mean

A four-point Likert scale was used. The responses were very important, important, moderate and less moderate. Their weight was: very important (4), important (3), moderate (2), less moderate (1).

The model for the Likert means score is given below:

$$\frac{n_1w_1 + n_2w_2 + \dots + n_4w_4}{\sum n_i}$$

Where: $i = n_1n_2 n_3n_4$

Likert mean score = [(number of people who selected response 1) × (weighing of response 1) + (number of people who selected response 2) × (weighing of response 2) ... (number of people who selected response n) × (weighing of response n)] / (total number of respondents).

RESULTS AND DISCUSSION

Socioeconomic Characteristics of onion retailers

The results of the socioeconomics characteristics of onion retailers showed that 34% of respondents were male while 66% were female. This implies that women were more involved into the retail business than male in the study area.

Results also showed that 14% were single, 70% were married, 10% were divorced while 6% were widowed/widower. This implies that most onion retailers were married indicating that they were stable with their business as far as marriage was concerned and this could lead to improving the size of their business as supported by Grema *et al* (2015) that majority of the respondents 72.5% were married, where as 20% were single, and 7.5% of the respondents were divorced. This indicates that Onion trading was mostly engaged by married men.

Also, the results showed that the mean age of retailers was 37.38 years. This implies that retailers were in the productive age which could lead to increase in their efficiency. Specifically, 18% were between 30-35 years, 78% were between 36-41 years while 4% were greater than 41 years. Majority are traders. This is supported by the study of Eze and Anumihe (2006) that the respondents had a mean age of 37.2 years.

The average annual income was 100,256 Naira. This average low income could be explained by the fact that majority of retailers were operating in small scale businesses. Specifically, 4% had annual income of 1-50,000 Naira, 50% had annual income of 50,001-100,000 Naira, 38% had annual income of 100,001-150,000 Naira and 8% had annual income of 150,001-200,000 Naira. In similar vein Obasi *et al* (2019) who reported a high cost of transportation, the cost of rent accounted for 8.63% after which cost of loading and offloading with 3.19% then cost of market charges with 0.73%. An average net return of ₦12,020 was realized per month

The average household size was 7.36. This implies that there was availability of family labour and this could lead to reduced cost of marketing. Specifically, 64% had 5-7 members and 36% had 8-10 members. The average marketing experience was 9.94 years. This implies that on the average

retailers are experienced enough to manage their activities. Specifically, 20% had 6-8 years of experience, 64% had 9-11 year of experience, 16% had above 11 years of experience. The mean of education was 6.84 years. This implies that retailers were literate enough to acquire additional knowledge to expand their businesses. Specifically, 12% had no formal education, 62% had 6 years of education and 26% had 12 years education.

Table 1: Socioeconomic characteristics of respondents

Variables	Frequency	Percentage	Mean
Sex			
Male	17	34	
Female	33	66	
Marital status			
Single	7	14	
Married	35	70	
Divorced	5	10	
Widow/widower	3	6	
Age (years)			37.38
30-35	9	18	
36-41	39	78	
>41	2	4	
Major occupation			
Trader	50	100	
Annual income (Naira)			100256
1-50000	2	4	
50001-100000	25	50	

100001-150000	19	38	
150001-200000	4	8	
Household size			7.36
5-7	32	64	
8-10	18	36	
Marketing experience (years)			9.94
6-8	10	20	
9-11	32	64	
> 11	8	16	
Education (years)			6.84
0	6	12	
6	31	62	
12	12	26	

Source: Field Survey, 2023

Gross marketing Margin

The results of the gross marketing margin shows that the selling price ranges between 6,400 and 10500 with mean and standard deviation of 8,632 Naira and 1,148,280 respectively while buying price ranges between 5,000 and 9,000 with mean and standard deviation of 7,327 and 1,118,280 respectively. Therefore, the gross marketing margin ranges between 6.25 and 33.33 with mean and standard deviation of 15.18 and 5.74 respectively. This value could be explained that the price volatility may likely affect the gross marketing of retailers. The result further implies that as far as the gross marketing margin is concerned the mean gross marketing margin of retailers could increase or reduce by 5.74 as supported by the study of Illo *et al* (2016) that the total variable costs incurred by the retailer was N15,325,33k, while the selling price per bag was N19,666k, and the gross margin realised (total profit realized by the retailer) was N4,340.67k.

Table 2: Gross marketing Margin

	Minimum	Maximum	Mean	Standard deviation
Selling price	6,400	10500	8632	1148.280
Buying price	5,000	9000	7327	1,118280
Gross marketing margin	6.25	33.33	15.18	5.74

Source: Field Survey, 2023

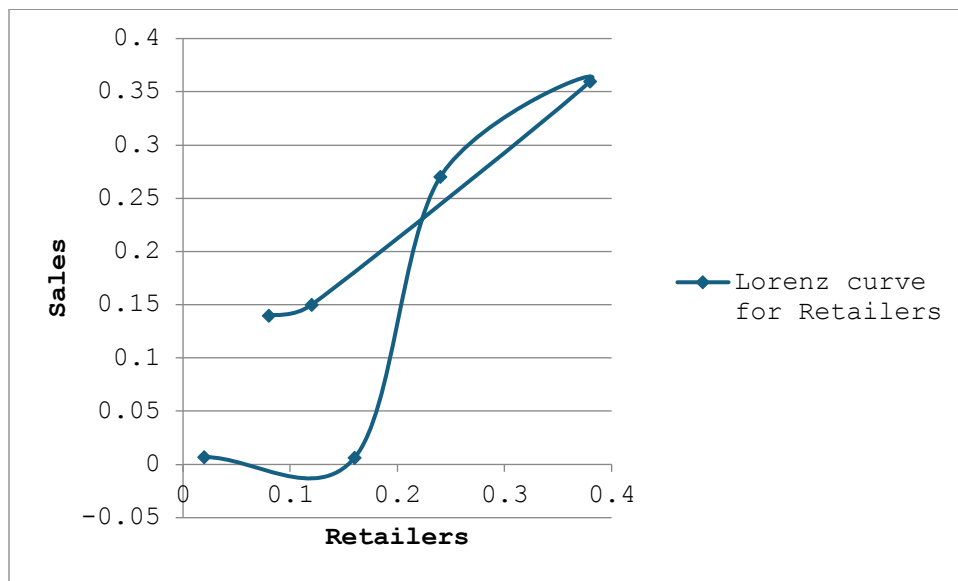
Market Structure

The results of the market structure shows that Gini coefficient is 0.76. This implies that there is a high competition among retailers in the study area as supported by the study of Abdullazeez *et al* (2018) that the Gini index for onion marketers are 0.47 and 0.52 for the wholesalers and retailers respectively. Gini index of 0.35 and above is regarded as high (Illo *et al.*, 2016); an indication of highly concentrated market of both retailers and wholesalers. However, that of retailers is higher in concentration than that of wholesalers.

Table 3: Market Structure

Categories of sales	Number of Wholesalers (s)	Proportion of producers (Xi)	Total values of annual sales	Proportion of annual sales (Yi)	$\sum X_i Y_i$
1-30000	1	0.02	19200	0.007	0.00014
30001-60000	8	0.16	160400	0.062	0.00992
60001-90000	12	0.24	697600	0.27	0.0648
90001-120000	19	0.38	935600	0.36	0.1368
120001-150000	6	0.12	408000	0.15	0.018
>150000	4	0.08	362000	0.14	0.0112
Total	50		2582800		0.24
Gini Coefficient		0.76			

Source: Field Survey, 2023



Lorenz Curve for Retailers

Gross Margin

The results of the profitability show that on the average total variable cost ranges between 28,200 and 160,650 with mean and standard deviation of 84,602 and 34,496.835 respectively while total revenue ranges between 19,200 and 200,000 with a mean and standard deviation of 98,928 and 36,791 respectively. This implies that total gross margin ranges between -9,000 and 63,520 with mean and standard deviation of 14,325 and 11,624.904 respectively. This implies that the business is profitable among retailers of Onion. The result further implies that as far as gross margin is concerned the mean gross margin of onion retailers could increase or reduce by 11624.904. This result could also be due to the purchased cost which constitutes 99.28 % of total variables cost as supported by the study of Sulumbe *et al* (2015) that the average gross margin per 50 kg bag for wholesalers was N2,888.00 and N 3,130.00 for retailers. This means that onion marketing in Monguno Local Government Area is profitable business for both the retailers and the wholesalers. The net return per naira invested was 0.32% for wholesalers and 0.29% for retailers.

Table 4: Gross Margin

	Minimum	Maximum	Mean	Standard deviation
Transport cost	50	500	162.40	81.53
Loading cost	0	50	35.20	20.52
Offloading cost	0	100	28.70	22.42
Storage cost	0	250	102	75.56
Market levy	20	100	53.80	16.64
Cost of bags/basket	100	300	112	47.98
Local government levy	20	100	67.60	27.88
Cost of purchased	10	160000	84000	34454
Total variable cost	28200	16,0650	84602	34,496.835
Total revenue	19200	200000	98928	36791
Gross margin	-9000	63520	14325	11624.904

Source: Field Survey, 2023

Marketing Efficiency

The result of marketing efficiency shows that net margin ranges between -9,000 to 63,520 with mean and standard deviation of 14325 and 11,624.904 respectively while marketing cost ranges between 270 to 850 with mean and standard deviation of 561.70 and 140.377 respectively. Therefore, the marketing efficiency ranges between -18 to 135.14 with mean and standard

deviation of 26.76 and 23.65 respectively. This implies that on the average onion retailers are efficient given that their marketing efficiency is greater than 1 as supported by the study of Sulumbe *et al* (2015) that the wholesalers had an efficiency of 132% while the retailers had an efficiency of 129% which shows that the wholesalers were more efficient in performing their marketing functions compared to the retailers.

Table 5: Marketing Efficiency

	Minimum	Maximum	Mean	Standard deviation
Net margin	-9000	63520	14325	11624.904
Marketing Cost	270	850	561.70	140.377
Marketing Efficiency	-18	135.14	26.76	23.65

Source: Field Survey, 2023

Constraints

The results of constraints using four-point likert scale with a benchmark of 2.5 show that mean debt (3.06), mean seasonality (3.14) and mean robbery (3.02) are the factors that seriously constrained the activities of onion retailers in the study area as opposed by the study of Abdullazeez *et al* (2018) that lack of credit facilities was the major problem faced in the onion marketing as indicated by 80% of the respondents. Credit facilities play an important role in expansion of the business which will lead to higher income. Nearest to the credit was the problem of high cost of transportation. About 73% of the respondents indicated that high cost of transportation was a problem to their business. High cost of transportation will lead to high cost of marketing services and hence affect marketing efficiency

Table 6: Constraints

	N	Mean	Decision
Transportation	50	1.16	Disagree
Storage facilities	50	1.16	Disagree
Credit facilities	50	1.40	Disagree
Debt	50	3.06	Agree
Taxes/levies	50	1.92	Disagree
Lack of Insurance	50	1.48	Disagree
Seasonality	50	3.14	Agree
Robbery	50	3.02	Agree
Capital	50	1.24	Disagree
Valid N (listwise)	50		

Source: Field Survey, 2023

CONCLUSION

Onion retail marketers in the area were mostly female, married with large household size, within the active age, well experienced, fairly educated, and high-income earners. The gini coefficient model used to determine the structure of the market indicates that there is inequitable distribution of sales income. Onion sellers in the area were efficient, competitive, and profitable with the purchase of onion accounting for the highest marketing cost. The greatest challenge faced by onion sellers in the area were issues concerning debts seasonality and robbery.

Generally, the data obtained for this research might help the sellers and provide information for potential investors in marketing of perishable agricultural products. It may also facilitate improving the formulation and implementation of food self-sufficiency policies, which will help minimize the perishability of agricultural products and the problems associated with their marketing and distribution, such as spoilage and wastage.

RECOMMENDATIONS

Based on the findings, the following recommendations were made:

1. Interest rate at single digit should be given to onion retail marketers for loans obtained because they have low annual income and the fact that debt is a constraint faced by the retailers.
2. Machinery for price stability should also be set up by government to sustain the onion marketers given that seasonality is also a major constraint to their activities. This could be by building storage facilities.
3. More security post should be provided given that the robbery is among the constraints faced by the marketers.

4. Efforts should be made to eliminate the constraints to onion marketing in the study area by improving on socioeconomic facilities such as road, markets and related amenities. The Benue state government can do its own part by renovating existing bad roads and constructing new ones, especially those that link the points of supply to the point of consumption.
5. The marketers should be encouraged to form co-operative societies to promote bulk purchase and transportation of onion in the area. This will reduce high cost of transportation involved in the marketing of those commodities as well as enabling them achieve the benefits from economy of scale.

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