PROFITABLITY OF ONION MARKETING IN YOLA NORTH LOCAL GOVERNMENT AREA OF ADAMAWA STATE, NIGERIA

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ABSTRACT
This study analyzed the profitability of onion marketing in Yola North Local Government Area of Adamawa State, Nigeria. Data were collected from Jimeta Modern market, Old market and Yola by-pass market. Descriptive statistics, gross margin, marketing margin and Herfindal Hirschman index were the analytical tools used for the study. The results revealed that onion marketing is profitable with a gross margin of ₦35,83811/month and ₦234,610.00/month for the retailers and wholesalers respectively. Retailers and wholesalers obtained a respective net income of ₦35,74373 and ₦234,083.75 per month. The marketing margin for retailers and wholesalers was found to be 10.4% and 22.0% respectively. The respective Herfindal Hirschman indices of wholesalers (0.14) and retailers (0.04) indicated that there was no market concentration as wholesalers makes more profit than retailers. Lack of credit facilities to expand the business, high cost of transportation due to bad feeder roads were the major problems encountered by the marketers. The study recommends that credit facilities should be provided to marketers, bad feeder roads linking producing areas and the markets should be rehabilitated and high cost of transportation be addressed so as to expand their business, reduce loses and in turn maximize profit.

Keywords: Concentration, Gross margin, Marketing margin, Onion, Profitability.

INTRODUCTION

Onion (*Allium cepa*) is a vegetable which belongs to the family *Leliaceace* (Alabi and Adebayo, 2008). It is one of the most consumed vegetable crops in Asia and Africa, especially Nigeria (Stan, 2016). The bulb grows underground and is used for energy storage, leading to the possibility of confusion with a tuber which it is not (Wikipedia, 2017). The leaves are bluish green and hollow, the bulbs are large, fleshy and firm. It is marketed mainly as a fresh fruit vegetable and features prominently in most households in the preparation of food and is effective against common cold, heart diseases, diabetes, osteoporosis, and cough and sore-throat. They are high in flavonoids which is concentrated on the outer layer of the flesh (Nemeth *et al.*, 2007).

Onion is the second most important vegetable after tomato (Hussani *et al.*, 2000). It is extensively cultivated throughout the country under a wide range of climatic conditions and it can be biennial, triennial or a perennial crop. About 60 million tons of dry onions are produced annually across 7.4 million acres in over 134 different countries out of which, Nigeria produced 240,000 tons of green onions and 1,350,000 tons of dry onions in 2012 (Yara International [Y. I.], 2017). This large figure places Nigeria on the list of the top 10 largest producers of onions in the world (Stan, 2016). Major producers of onion over the last ten years include China, India and United States accounting for about half of the world's dry onion production. Other countries with annual production figures above 1.1 million tons are Brazil, Iran, Japan,

Pakistan, Turkey and Russia. The current average world yield stands at 7.6 tons/acre, but highest average yields of 17 - 26 tons/acre are found in Korea, Japan, Europe and the USA (Yara International, 2017).

In agriculture, horticultural crops including onions have a significant place; the crop not only contributes to the share of agriculture in national economy, but possesses a great potential and comparative advantage to compete in the economy. The ease of cultivation, widespread uses and excellent health and financial benefits of onions makes them a top choice in the preparation of most meals in Nigeria (Stan, 2016). This high demand has not just made onion farming a top agribusiness choice to venture into, but has made it a source of constant recurrent revenue for thousands of farmers in Nigeria. Onions are chopped and used as food ingredients in many homes. Almost every household uses onions as a key ingredient in their meals; as a result of this, many farmers venture into onion farming on a large scale. On a small scale, onion farming can also be a source of food ingredients and also serve as a monthly income source to farmers around the world growing a sufficient quantity to sell periodically can establish a steady revenue stream for any agribusiness entrepreneur (Stan, 2016). Onions are usually cultivated towards the end of the year, and harvested towards the middle of the following year. They are best grown in seasons without extreme heat or cold and can be grown at elevations of 1,400 meters to 2,000 meters under adequate rainy conditions. Their planting times are best between April and August (Stan, 2016).

Onion, like other vegetable marketing assumes greater importance in the Nigerian economy because the excess production from the farm must be disposed-off in order to earn income with which farmers can purchase goods and services not produced by them. Onion consumption is spread throughout the year and there is a constant demand for onion bulb all year round and hence, it poses a problem especially in Nigeria as most of the onions are produced in the northern part notably Kano, Sokoto, Borno, Bauchi, Jigawa, Kastina and Zamfara States (Inuwa, 2001). This causes its movement from the north to consumers in the southern states who are very far apart a difficult task.

The main aim of marketing is to achieve efficiency, but most of Nigerian agricultural markets are inefficient due to high market margin, abnormal profits, poor infrastructural facilities, high marketing cost and poor pricing performance (Bila and Bulama, 2007). Therefore, this study analyzed the gross margin, marketing margin as well as market concentration and identified the problems of onion marketing in the study area.

MATERIALS AND METHODS
The Study Area

Yola North is the administrative center of Adamawa State, Nigeria located along Longitude 9°13'48"N and Latitude 12° 17'36"E (Wikipedia, 2018). It has a projected population of 280,407 using 2.5% population growth rate per annum (NPC, 2006) and a total area of 831km^2. The Local Government area (LGA) is bounded to the north by the Mandara Mountains and to the south are the Shebshi Mountains with Dimlang (Vogel) Peak the second highest point (2,042m) in Nigeria after Chappal Waddi; bounded by Yola South from south and West and Girei LGA from north and east. The area lies in the hot climatic Guinea Savannah zone of Nigeria, with an annual rainfall of 958.99mm. August and September are considered as the wettest months, the dry season is between November and April with a temperature range of between 39°C to 45°C (Adebayo, 1999). More than 80% of households in the area are smallholder farmers growing crops such as maize, sorghum, millet, soy beans and cassava. The study area is located near the bank of River Benue which favours the production of onion in both dry and rainy seasons.

Sampling Method

The major markets namely Jimeta Modern Market, Old market and Yola By-pass market were purposively selected based on the concentration of onion marketers. Of these markets, 80 marketers comprising of 16 wholesalers and 64 retailers were randomly selected from the existing sampling frame and were used for the study.

Analytical Techniques

Descriptive statistics, gross margin, marketing margin and Herfindahl-Hirschman Index (HHI) were employed for the analysis as used by Nzima *et al*. (2014); Hailegiorgis, (2017); Arifa and Basanta (2017) and Abbas *et al*. (2017). Descriptive statistics which involves the application of percent, frequency, mean and standard deviation was used to analyze problems associated with onion marketing, gross margin and marketing margin were used to analyze the profitability of onion marketing, while HHI was used to determine onion market concentration.

Gross margin analysis

Gross margin (GM) is the differences between Gross income (GI) and the total variable cost (TVC). The variable cost includes the cost of transportation, handling and marketing. Olukosi and Erhabo (2008) emphasized gross margin analysis as the difference between the gross income (GI) and total variable cost (TVC). Gross margin is employed to measure the cost and returns of Onion marketing. The Gross margin model can be specified as:

GM = TR- TVC   … (1)

where;
GM = Gross marketing Margin (₦)
TR = Total Revenue/Naira (₦)
TVC = Total Variable Cost (₦)

Marketing margin

Marketing margin is the disparity between the cost of purchasing items (wholesale) and the income made by selling them (Merello, 2018). Marketing margin reflects the effect of the product characteristics on the complexity of the marketing functions that must be performed as the product passes through the marketing system (Ijarafu, 2010). This is specified as:

$$MM = \frac{SP-CP}{SP} \times 100$$ … (2)

where;
MM = market margin per bag (%)
CP = cost price per bag (₦)
SP = selling price per bag (₦)

Herfindal Hirschman index (HHI)

Herfindal Hirschman Index (HHI) as used by Nzima *et al*. (2014) is given by;

$$HHI = \sum_{i=1}^{n} MS^2$$ … (3)

where;
MS_i = the market share of sellers and n is the number of sellers in the market. The market share was calculated based on the quantity (in Kg) handled by each sellers as follows;

$$MS_i = \frac{Vi}{\sum Vi}$$ … (4)

where;
V_i = the quantity of onion (in Kg) by a seller i

$\sum V_i$ = the total quantity of groundnut by sellers in the market (in Kg).

Increases in the Herfindahl index generally indicate a decrease in competition and an increase of market power whereas decreases indicate the opposite (Wikipedia, 2018).
An H below 0.01 (or 100) indicates a highly competitive industry. An H below 0.15 (or 1,500) indicates an unconcentrated industry. An H between 0.15 to 0.25 (or 1,500 to 2,500) indicates moderate concentration. An H above 0.25 (above 2,500) indicates high concentration.

RESULTS AND DISCUSSION
Gross Margin Analysis

Gross margin (GM) is the difference between Gross income (GI) and the total variable cost (TVC). The results in Table 1 revealed that retailers and wholesalers had a total revenue of ₦372,237.50 and ₦2,888,000.00 with their respective total variable costs of ₦336,399.39 and ₦2,653,390.00. Fixed cost (FC) was found to be negligible in which ₦94.38 and ₦526.25 was incurred by the retailers and wholesalers respectively. The gross margin was calculated and the sum of ₦35,838.11/month and ₦234,610.00/month was obtained for the retailers and wholesalers respectively. By implication, the result revealed a good profit margin an indication that the onion business is profitable. This is in agreement with the results obtained by Abbas *et al*. (2017) in Kano State Nigeria, who also found that onion marketing is a profitable venture with a gross margin of ₦925.00/bag of onion. Retailers realized a net income of ₦35,743.73/month, while wholesalers raked in ₦234,083.75/month as net income per month. This is in agreement with the finding of Grema *et al*. (2015) in Yobe State, Nigeria who also found that the onion marketing is profitable business with retailers and wholesalers realized a net income of ₦3,469.54 and ₦5,515.58 per bag of onion sold, respectively.

Table 1: Average Costs and Returns (per month) in Onion Marketing

Item	Retailers (₦)	Percent	Wholesalers (₦)	Percent
Total Revenue				
Sales	**372,237.50**		**2,888,000.00**	
Variable Costs				
Purchase cost	333,512.50	99.14	2,252,500.00	84.89
Transportation	1,578.13	0.47	267,000.00	10.06
Tax	571.88	0.17	62,837.5	2.37
Commission Agents	175.00	0.05	60,750.00	2.29
Loading/offloading	62.50	0.02	6,875.00	0.26
Sorting	-	-	3,250.00	0.12
Polythene bags	499.38	0.15	177.50	0.01
Total Variable cost	**336,399.39**	**100**	**2,653,390.00**	100
Fixed Cost				
Rent	94.38	-	526.25	-
Total Cost (VC+FC)	**336,493.77**		**2,653,916.25**	
Gross Margin	**35,838.11**	-	**234,610.00**	-
Net Income	**35,743.73**	-	**234,083.75**	-

Source: Field Survey, 2018

Marketing Margin

Marketing margins is the disparity between the cost of purchasing items (wholesale) and the income made by selling them (Merello, 2018). The higher the marketing margin the higher the profit. The results revealed that the marketing margin for wholesalers and retailers were 22.0% and 10.4% respectively. This implies that wholesalers get higher profit than the retailers and hence the business is profitable. This finding is in line with that of Sulumbe *et al*. (2015) in Borno State, Nigeria who found that the marketing margin of wholesalers and retailers were 31.98% and 27.27%, respectively, and maintained that the marketers got a fair share of the profit in onion marketing. The finding is also in line with the one obtained by Abbas *et al*. (2017) in Kano State Nigeria, who found that onion marketing is profitable with a marketing margin of 42.6%.

$$\text{MM (Wholesalers)} = \frac{2,888,000.00 - 2,252,500.00}{2,888,000.00} \times 100 = 22.0\%$$

$$\text{MM (Retailers)} = \frac{372,237.50 - 333,512.50}{372,237.50} \times 100 = 10.4\%$$

Onion Market Concentration

The concentration of onion marketers was assessed using Herfindal Hirschman Index and the result revealed that wholesalers and retailers had HHI of 0.14 and 0.04 respectively. HHI values of less than 0.15 in each of wholesalers and retailers implies that there was no market concentration, but wholesalers was found to be fewer in the market than their retailers' counterparts. By implication, the dominance few wholesalers in the market indicate low competition and hence, make onion producers receives low prices. Retailers, despite unconcentration in the market, were relatively competitive due to their number being higher in the market. This finding agreed with the finding of Illo *et al*. (2015) in Kebbi State, Nigeria who also found less concentration wholesalers and retailers in the market with concentration indices(Gini index) of 0.026 and 0.103 for wholesalers and retailers, respectively.
Herfindal Hirschman Index -HHI (Wholesalers) = 0.136831
Herfindal Hirschman Index -HHI (Retailers) = 0.040871

Problems Associated with Onion Marketing

The constraints affecting onion marketing in the study area were identified as presented in Table 2. It shows 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 leads to higher income. Nearest to the credit is the problem of high cost of transportation. About 73% of the respondents indicated that high cost of transportation is a problem to their business. High cost of transportation will lead to high cost of marketing services and hence affect marketing efficiency. This agrees with the findings of Grema *et al*. (2015) in Bade and Geidam Local Government Areas of Yobe State who reported that high cost of transportation was the major problem of onion marketers in the area. Other problems in the onion marketing include security challenges (42.5%), lack of storage facilities (40%) which were ranked 3rd and 4th respectively. Poor market information (37.5%), poor market structure (37.5%), High marketing tax (35%), supply fluctuation (35%), price fluctuation (27.5%) and lack of uniform unit of measurement(15%) were also indicated as

problems of onion marketing and these are ranked 5th, 6th, 7th, 8th, 9th and 10th respectively in order of severity.

Table 2: Problems Associated with Onion Marketing in the Study Area

Problems	Frequency*	Percentage	Rank
Lack of Credit Facilities	64	80.0	1st
High Cost of Transportation	58	72.5	2nd
Security Challenges	34	42.5	3rd
Lack of Storage Facilities	32	40.0	4th
Poor Market Information	30	37.5	5th
Poor Market Structure	30	37.5	5th
High Marketing Tax	28	35.0	7th
Supply Fluctuation	28	35.9	8th
Price Fluctuation	22	27.5	9th
Lack of Uniform Measurement Unit	12	15	10th
Total	80		

* Multiple responses exists
Source: Field Survey, 2018

CONCLUSION AND RECOMMENDATIONS

The study revealed that onion marketing is a profitable venture in the study area. Wholesale of onion marketing was found to be more profitable with their net income of ₦35,74373 per month than the retail marketing who realized a net income of ₦234,083.75/month due to higher marketing margin obtained by the former. Both categories of the marketers were unconcentrated with respective concentration indices of 0.14 and 0.04 for wholesalers and retailers, but with relatively low concentration among the wholesalers which is an indication of monopoly among them. The major problems faced by the marketers were lack of credit facilities to expand the business and high cost of transportation due to bad feeder roads to the study area.

The following recommendations were made based on the findings of the study.

i. Government should come up with policies that will remove the barriers from entry and exit into the markets so that less income group of marketers will also have access to commodity like any other marketer.

ii. Credit facilities should be provided to marketers so as to expand the business and this will in turn maximize profit.

iii. Bad feeder roads that linked the producing areas and the market should be rehabilitated as this will reduce losses incurred and high cost of transportation.

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