Marketing of Orange Fruit in Maiduguri Metropolitan Area, Borno State, Nigeria

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Abstract

This study examined the marketing of orange fruit in Maiduguri. Primary data were obtained from the respondents with the use of structured questionnaires that were filled through interviews from 60 respondents. 30 wholesalers were randomly selected from the major wholesale market and 30 retailers, were also randomly selected, ten each from three different wards of the town. Descriptive statistics were used to analyze the socio-economic characteristics of the marketers as well as the problem associated with the orange fruit marketing. Gross margin analysis was used to determine the profitability of the marketing, while Gini coefficient was used to determine the degree of market concentration. The results show that all orange marketers were in their economically active age and are mostly males with very few educated up to tertiary level (ten percent). The cost and returns analysis showed that the gross margin per marketer per week for wholesalers is ₦ 228,500, while for retailers is lower at ₦ 6,355. However, the gross margin per kilogramme of ₦ 30 for the wholesale market is less than that for the retail market which stood at ₦ 41/kg. The wholesale market has a high level of market concentration with a Gini coefficient of 0.813, while the retail market has a lower degree of concentration with a coefficient of 0.466. The markets therefore have monopolistic and oligopolistic tendencies respectively. Problems mentioned by the marketers include shortage of capital and storage facilities. The study therefore recommends that credit at favourable terms and modern storage facilities be provided to the marketers. This can enable them to expand their scale and possibly lower their cost. This could lead to lower prices to consumers and hence increased intake of orange fruits for better health outcomes.

Keywords: Orange, market channel, profitability, market structure

1. Introduction

Fruits provide an abundant and cheap source of fiber and several vitamins and minerals. In general they have the highest nutritional value when eaten fresh, although an exception may be fermented foods, in which the process of fermentation can increase the content of B vitamins. Fruits play a number of important roles in human health. They provide antioxidants such as vitamin A that are important in neutralizing free radicals (oxidants), known to cause cancer, cataracts, heart disease, hypertension, stroke and diabetes (Mintesnot 2016). Diets high in fruits are widely recommended for their health promoting properties. The major fruits produced in Nigeria include mango, pineapple, plantain/banana, citrus, guava and pawpaw.

The sub-genus *Citrus* (Swingle), family Rutaceae and subfamily *Aurantioideae* is of three types: *Citrus, Fortunella (Kumquat)* and *Poncirus Trifoliata*. There are three genera and eighteen defined species, but other natural mutations exist resulting to numerous hybrids which are widely spread throughout the world (Guo and Deng, 2001) in (Etebu and Nwauzoma, 2014) who further state that sweet orange (*Citrus sinensis* L. Osbeck), commonly called orange is a member of this family. Fakayode *et.al*, (2010) reported that sweet orange is one of the most important fruits in the tropical and sub-tropical regions of the world. The fruits are eaten fresh and used for making canned orange juice. Large quantities of sweet orange are used to produce single strength juice, frozen concentrate, rind oil, pectins used in the production of jams and jelly pulp residue which is fed to livestock. The orange juice is also extracted and used for flavours for food items. In Nigeria, the production of citrus fruits, with orange said to be the most important, rose from a million tons per annum in the early sixties to 4, 088, 994 tons in 2017(FAO, 2019).

More than three quarters of adults in less developed countries consume less than the minimum recommended five daily servings of fruit and vegetables. In sub-Saharan Africa the level of fruits is much less common and varies across countries. Also the average consumption (in kg per capita per year) is lower for fruits than vegetables in most countries (Ruel *et. al*, 2005). The authors further reported that consumption of both products is generally higher in urban areas compared to rural areas. Yahaya (2018), reported that even though fruit consumption has increased by approximately ten percent per year, per capita daily fruit juice intake in Nigeria is only 20mg compared to the recommended minimum requirement of 75mg.

This low per capita consumption of fruits in many developing countries including Nigeria may be due to low

awareness of their nutritive value or their high retail prices. The high prices are often blamed on middlemen who are accused of exploiting both fruit growers and consumers in fruit markets like that of Maiduguri. Such accusations tend to gain support whenever the marketing margin is high. However, such accusation may not be justified unless the costs and returns in marketing involved and other market characteristics are fully understood and properly estimated. To this effect this study aims at conducting ananalysis of Orange Fruit Marketing in Maiduguri. The main objective of the study is to conduct an analysis of the marketing of orange fruit in Maiduguri. The specific objectives of the study were to:

i. examine the socio-economic characteristics of the orange fruits marketers;
ii. examine the marketing channel for the orange fruits;
iii. determine the profitability of marketing orange fruits;
iv. determine the structure of orange fruit market; and
v. identify the problems associated with marketing of the orange fruits in the study area.

2. Methodology
2.1 Study Area
The study was conducted in Maiduguri, the capital of Borno State, Nigeria. It is located between latitudes 11 42N and 12 00 N and longitudes 12.54 and 13 14 E and has a land area of 543 km^2 (Haruna 2010) in (Ikusemoran and Jimme, 2014). The city is bounded in the north by Jere LGA, in the west, south and south-west by Konduga , in the north-west by Mafa LGA. Maiduguri has mean annual maximum temperature of 34.8 with mean (monthly) temperature ranging between 30 and 40 C. The city receives rainfall from June to September. However in rainy years, the city records rainfall earlier than June and latter than September. Being a nodal city, trading is the major occupation of the inhabitants with few agrarian practices (Ikusemoran and Jimme, 2014). It has a population of about 521,492 people which was projected to be 746,721 for 2019 based on an annual growth of 2.8% (NPC, 2006). Maiduguri town is the largest in the north east geopolitical zone and lies in the Sudan Savannah ecological zone characterize by few trees and vast grass land.

2.2 Source of Data
Primary data and secondary information were used for the study. Primary data was obtained in 2018 from the respondents with the use of structured questionnaires that were filled through interviews. Secondary information was obtained from the internet and publications.

2.3 Sampling Techniques
Multi-stage sampling technique was used to collect data for the study. In the first stage, Gamboru Market was selected from Maiduguri. This market was purposely chosen because it is the major fruit wholesale market in the town. In the second stage, 30 wholesalers from the market were randomly selected. For the selection of retailers, three wards (Maisandari, Elkanemi and Bolori II Wards) were purposively selected due to the preponderance of orange retailers in the areas.10 retailers were selected randomly from each ward. This gives a total of 30 wholesalers and 30 retailers, making a total of 60 respondents.

2.4 Analytical Techniques
2.4.1 Descriptive statistic
Descriptive statistics such as frequency tables and percentages was used to analyze the socio-economic characteristics of the marketers as well as the problem associated with the orange fruit marketing.
2.4.2 Gross Margin Analysis
This technique was used to determine the profitability of the marketing. This involved the analysis of the costs and return of orange fruit marketing. The gross margin is calculated as follows (Goni *et.al*, 2008):

GM = GI – TVC

Where:
GM = Gross Margin (₦)
GI = Gross income (₦)
TVC = Total Variable Cost (₦)

The gross margin was used because the fixed cost of most small scale agricultural operation is negligible.
2.4.3 Market Structure
The structure of the market was determined based on the finding on the market concentration.
2.4.3.1 Market Concentration
The Gini coefficient was used to determine the degree of market concentration of the sellers in the market. The Gini coefficient was computed using the following formula as used by Adinya *et. al*, (2007) and Goni *et.al*, (2008).

G=1-∑xy

Where   G=Gini Coefficient

X= Percentage share of each class of seller

Y = Cumulative percentage of their sales

The Gini Coefficient ranges from zero to one. It is a standardized coefficient such that zero implies perfect equality in earning, while coefficient of one means perfect inequality in earning. The closer the value is to unity (one), the greater is the degree of inequality and therefore, the higher is the level of concentration. Higher concentration signifies that a market is monopolistic in nature, with few individuals controlling it.

3. Results and Discussion

3.1 Socio-Economic Characteristic of Orange Fruit Marketers in Maiduguri

Table 1 shows that (96.67%) of orange marketers in Maiduguri were males and they all fall within the economically active age of 15 to 60 years (FAO, 1992). The analysis of marital status shows that (81.67%) are married, (8.33%) single, (8.33%) divorced and (1.675%) widowed. In terms of educational status of the marketer's, the analysis shows that 36.6% had Islamic education, 28.33% had   secondary education,

Table 1: Socio-Economic Characteristics of Orange Fruit Markets in Maiduguri (n = 60)

Characteristics	Frequency	Percentage (%)
Gender		
Male	58	96.67
Female	2	3.33
Age group (years)		
20-29	7	11.67
30-39	29	48.33
40-49	13	21.67
50-59	11	18.33
Marital Status		
Married	49	81.67
Single	5	8.33
Divorce	5	8.33
Widowed	1	1.67
Other	0	0
Educational Level		
Primary Education	10	16.67
Secondary Education	17	28.33
Tertiary Education	6	10.00
Islamic Education	22	36.67
No Formal Education	5	8.33
Total	60	100
Household Size		
1-5	25	41.67
6-10	20	33.33
11-15	9	15.00
16-20	6	10.00
Marketing Experience (Years)		
1-10	23	38.33
11-20	22	36.67
21-30	6	10.00
31-40	8	13.33
41-50	1	1.67
>50	0	0.00

Source: Field Survey, 2018.

16.67% had primary education, 8.33% had no formal education with only 10% of the marketers educated up to tertiary level. 41.67% of the respondents have between 1-5 household members; 33.33% claimed to have between 6-10 members; 15% and 10% had between 11-15 and 16-20 members respectively. This reveals that respondent with large, medium and small household sizes were found in orange marketing in Maiduguri. Experience in marketing is a measure of the period an individual has been involved in the business/trading (Alufulai, et al, 2013). The analysis of the marketing experience revealed that appropriately 58.33% of the marketers have marketing experience of over 10 years. Hence they can be expected to use their experience to obtain higher profit.

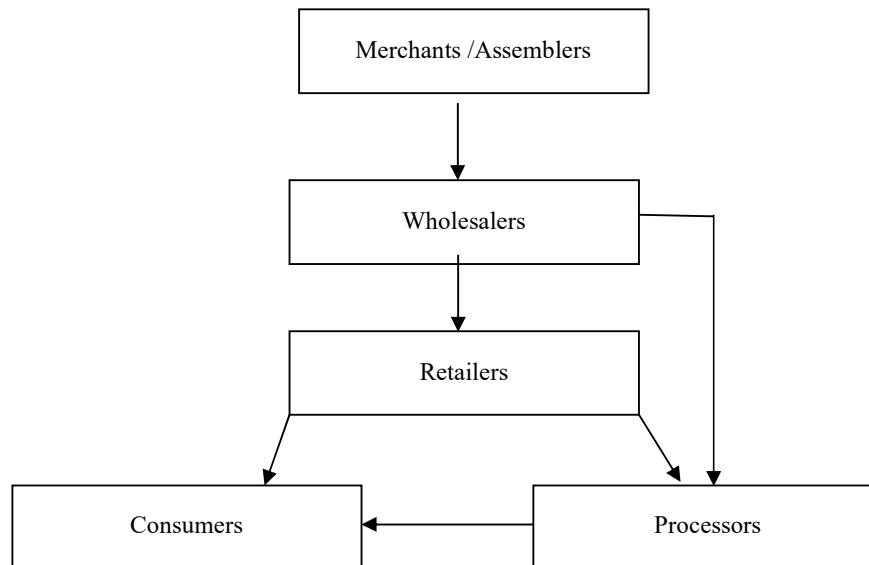*3.2 Marketing Channel for Orange fruit In Maiduguri*

Figure 1: Marketing channel for orange fruit in Maiduguri.

The analysis of the marketing channel was intended to provide a systematic knowledge of the path which orange fruit follow, from point of production to the point of consumption. Along the channel are individuals who perform the physical functions in order to obtain economic benefit. Presented above (Figure 1) is the marketing channel for orange fruit in Maiduguri. It indicates that the merchants sell to wholesalers and wholesalers sell to both retailers and processors, while the retailers sell also to both consumers and processors as well.

3.3 Profitability of Orange Fruit Marketing in Maiduguri
In order to determine the profitability in marketing orange, the various costs incurred in process of the marketing were identified summed up and the total variable costs subtracted from the gross returns. Tables 2 and 3 present the gross margin per week of orange marketing in Maiduguri for both wholesale and retail marketing. The profitability analysis is important in order to form a basis for comparison for setting priorities and for ensuring that limited resources are invested in business that are worthwhile (Ahmed, 1978).

Table 2: Gross Margin of Wholesalers per Week of Orange Marketing in Maiduguri

Quantity of Orange Handled by all the Marketers	228500 Kg
Average of Purchase Cost	₦ 100/Kg
Average Selling Cost	₦ 170/Kg
Transport Cost Incurred by all the Marketers	₦ 9,140,000.00
Total Variable cost of all the marketers	₦ 31,990,000.00
Gross income of all the marketers	₦ 38,845,000.00
Gross margin for all marketers	₦ 6, 855,000.00
Gross margin per marketer	₦ 228,500.00
Gross margin per kg	₦ 30.00

Source: Field Survey 2018.
NB: The transport cost comprises of payment for loading and offloading and conveying to marketers' shed.

Table 3: Gross Margin for Retailers per Week of Orange Marketing in Maiduguri.

Quantity of Orange Handled by all the Marketers	4650 Kg
Average of Purchase Cost	₦ 170/Kg
Average Selling Cost	₦ 216/Kg
Transport Cost Incurred by all the Marketers	₦ 23,250.00
Total Variable cost of all the marketers	₦ 813, 750.00
Gross income of all the marketers	₦ 1,004,400.00
Gross margin for all marketers	₦ 190, 650.00
Gross margin per marketer	₦ 6, 355.00
Gross margin per kg	₦ 41.00

Source: Field Survey 2018.

NB: The transport cost comprises of payment for loading and offloading and conveying to marketers' shed.

This analysis revealed that the gross margin per marketer per week for wholesalers is ₦228,500 with gross margin of ₦30/kg, and for retailers is ₦6,355 with gross margin of ₦41/kg. This shows that orange marketing in Maiduguri is profitable.

3.4 Market Structure for Orange Fruit in Maiduguri

Table 4: Distribution of Marketers by Weekly Sales of Orange in Maiduguri

Quantity of orange marketed per week (kg)	Mean (kg)	Number of sellers	% of sellers (X)	Average selling price per kg (₦)	Total value of sales (₦)	% of total of sale	Cumulative % of total	XY
5000-5,500	2,000	16	0.010	170	8,160,000	0.020	0.020	0.002
5551-10,500	8,000.5	5	0.003	170	6,800,425	0.017	0.037	0.011
10501-15500	13,000.5	6	0.002	170	13,260,510	0.033	0.403	0.008
15561-20,500	18,000.5	1	0.002	170	3,060,085	0.007	0.410	0.082
20,501-25,500	23,000.5	1	0.001	170	3,910,085	0.009	0.419	0.041
25,551-30,000	27750.5	1	0.001	170	4,717,085	0.011	0.430	0.043
Total		30			39,008,690			

Source: Field Survey, 2018.

$G = 1 - \sum xy = 1 - 0.187 = 0.813$

Table 5: Distribution of Retail Marketers by Weekly Sales of Orange in Maiduguri.

Quantity of orange marketed per week (kg)	Mean (kg)	Number of sellers	% of sellers (X)	Average selling price per kg (₦)	Total value of sale (₦)	% of total of sale	Cumulative % of total	XY
50-100	25	12	0.400	216	194,400	0.222	0.222	0.089
101-150	125.5	8	0.239	216	216,864	0.247	0.469	0.112
151-200	175.5	4	0.171	216	151,632	0.173	0.642	0.109
201-250	225.5	4	0.133	216	194,832	0.222	0.864	0.115
251-300	275.5	2	0.109	216	119,016	0.132	1	0.109
Total		30			876,744			0.534

Source: Field Survey, 2018.

$G = 1 - \sum xy = 1 - 0.534 = 0.466$

The Gini coefficient of the marketers was found to be 0.813 for wholesalers (Table 4) while that of retailers was 0.466 (Table 5). The Gini coefficient of wholesalers tends toward one which shows that there is a high degree of inequality in earnings. This implies a high level of market concentration, which signifies that the market is monopolistic in nature. On the other hand, the Gini coefficient for retailers tends towards zero which implies that there is less inequality in earnings and hence a lower degree of market concentration compared to that of wholesalers. Based on a Gini coefficient cut-off point of 0.4 recommended by Parker and Connor (1979), the retail market has oligopolistic tendencies.

3.5 Problem Associated with Orange Fruit Marketing in Maiduguri

A number of problems are encountered by the marketers. Table 6 presents the different types of problems

Table 6: Problems of Orange Marketing in Maiduguri

Problems	Frequency	Percentage (%)
Insufficient capital	54	90.00
Lack of adequate storage facilities	54	90.00
Activities of middlemen	52	86.67
Exorbitant taxes	29	48.33
Total	189	315

Source: Field Survey, 2018
NB: Multiple responses existed, hence total succeeded 100.

encountered by marketers of orange fruit. The result of the study revealed that the major problem facing orange marketers in the study area were insufficient capital 90% and lack of adequate storage facilities 90%, the third problem was activities of middlemen as revealed as 86.67% of the marketers. The problem also included exorbitant taxes of 48.33%. This might be because of the presence of large number of security agencies along the high way.

4. Conclusion

Findings from this study revealed that all orange marketers were in their economically active age and are mostly males with very few educated up to tertiary level. Orange marketing in Maiduguri was found to be profitable. The cost and returns analysis showed that the gross margin per marketer per week for wholesalers is ₦ 228,500, while for retailers is lower at ₦ 6,355. However, the gross margin per kilogramme of ₦ 30 for the wholesale market is less than that for the retail market which stood at ₦ 41/kg. In terms of market structure, Gini coefficient for wholesalers was found to be 0.813. This implies a high level of market concentration, hence the wholesale market can be said to be tending towards monopoly. On the other hand, the Gini coefficient for retailers was 0.466. This tends towards zero which implies that there is less inequality in earnings and hence a lower degree of market concentration compared to that of wholesalers. Based on a Gini coefficient cut-off point of 0.4 recommended by Parker and Connor (1979), the retail market has oligopolistic tendencies. Although orange marketing in the study area was found to be profitable, it is bedeviled by shortage of capital and storage facilities. The study therefore recommends that credit at favourable terms and modern storage facilities be provided to the marketers. This can enable them to expand their scale and possibly lower their cost. This could lead to lower prices to consumers and hence increased intake of orange fruits for better health outcomes

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