MARKET ANALYSIS OF APPLE FRUIT IN SELECTED MARKETS OF LAGOS STATE NIGERIA.

[1]Belewu, K.Y; [1]Akinsola, G.O; [1]Osasona, K.K; [2]Baba H.S &[1]Adisa Q.B
[1]Department of Agricultural Economics and Farm Management,
[2]Departmemt of Crop of Protection
University of Ilorin, P.M.B. 1515 Ilorin, Nigeria.
*****_Corresponding author:_ belyem9@gmail.com +2348033901883

ABSTRACT
This thesis studied the market analysis of apple fruit in selected markets of Lagos state, Nigeria. This project work stemmed from the need to assess the marketing structure, conduct and performance of the fruit in selected markets of Lagos state by using structured questionnaire which was administered to 102 apple fruit marketers in the study area. Data was analysed using descriptive statistics such as frequencies, mean and percentages, gini coefficient, concentration ratio, market margin and efficiency analysis, gross margin analysis, benefit cost ratio, ordinary regression analysis, and likert-type scale. To measure the market concentration: Gini coefficient and concentration ratio (CR4) were used to determine the market structure. The gini coefficient of 85.6% indicated that that there is inequality or high level of seller concentration at this level, a concentration of 47.7% which indicates a weak oligopolistic nature of the market. The performance of the market was efficient and profitable. A marketing margin of ₦4,902,877.0k/month and a marketing efficiency of 114% were obtained by the marketers. The transaction costs affecting the efficiency of the traders were the costs of storage, loading, transportation, and market levy. The three major problems of the traders were price fluctuation, high transportation cost, and lack of credit. Hence, the study suggests that there should be a provision of credit facilities and loans, intervention of government agencies and market association in stabilization of price, and reduction of tariffs and embargo.
Key Words: Apple, Marketer, Concentration ratio, Market margin

INTRODUCTION

The apple is the sweet, pomaceous fruit of the apple tree (*Malusdomestica).* It is the most commonly and culturally important fruit crop of temperate areas (Giroh*et al.,* 2010). It is cultivated worldwide as a fruit tree, and it is the most widely grown species in the genus *Malus.* The origin of the tree is central Asia, where its wild ancestor *Malussieversi,* is still found today. Apples have been grown for thousands of years in Asia and Europe and were brought to North America by European colonists. About 69 million tons of apples were grown worldwide in 2010, and China produced almost half of this total. The world production of apple in 2014 was 84.6 million and 48% of his total was produced by China (FAOSTAT, UN Food and Agriculture Organization, Statistics Division, 2017). The United States is the second-leading producer, with more than 6% of world production, followed by Turkey, India and Poland. Chile is currently the largest exporter of apple followed by New Zealand, Argentina and South Africa (Teka 2009)).

Apples are often eaten raw, but can also be found in many prepared foods (especially desserts) and drinks. Many beneficial health effects are thought to result from eating apples, as the proverb says "An apple a day, keeps the Doctor away". Apple is packed with rich phyto-nutrients that in the true sense are indispensable for optimal health. The antioxidants in apple have many health promoting and disease prevention properties. There are over 100 varieties of apples grown in North America; the varieties grown for commercial production are Red and Gold Delicious, McIntosh and Spartan. The varieties of apple differ in size, from a little larger than a cherry to as large as a grape fruit. Apple tree takes about four to five years to produce their first fruit. Apples contain dietary fibre in their skins and core. About 10% of an apple is made up of carbohydrate and 4% of an apple is made up of vitamins and minerals, more than 80% is made up of water. A medium sized apple contains about 40 calories, one kilogram (2.2 lb) of fresh apples provides approximately 2100kj (500 kcal) of energy. (Ferman 2016)

Apples are self-incompatible; they must cross-pollinate to develop fruit. Each season during the flowering stage, apple growers often make use of pollinators to carry pollen grains (especially honey bees). Orchard mason bees are also used in commercial orchards; Bumblebee queens are sometimes present in orchard, but not in sufficient quantity to be considered as significant pollinators (Boyer and Riu 2004).

Due to Nigeria's weather conditions, apples are not produced although there has been a steady rise in the demand for apple due to the growing middle class family, growing presence of large retail outlet and increasing population. The increased availability of fruits to meet the energy needs of man has often been emphasized.

The cost of apple fruit is high and to the average Nigerian, it is quite expensive which leads to the restriction in the consumption of apple. Nigerians generally have poor attitude towards the consumption of fruits. Moreover, the fact that apple

is an exotic fruit has its effect on the performance of apple fruit in the market.

Apple fruits are perishable and their productions is also seasonal but are still demanded throughout the year. Therefore, they have to be stored under favourable conditions to ensure the availability when needed in the market. The absence of these storage forces in Nigeria has affected the availability of this fruit for consumers and reduces the profitability level of apple marketers too.

Increase in price of agricultural goods can occur due to the long chain of middlemen that agricultural products (especially imported products) pass through before reaching the consumer. There are a number of intermediaries in the market like the wholesalers, brokers, commission agents, retailers and so on. As it passes through each individual, there is an increase in price. Some intermediaries even indulge in a number of undesirable practices of using false weight, black marketing and hoarding etc.

Growth of urban regions also creates marketing problems as there would be a problem of inadequate supply to meet up with the increase in size of the population.The research was undertaken to pursue these objectives: describe the structure of apple fruit marketing in the study area, determine the conduct of apple fruit marketinlg, evaluate the marketing margin of apple fruit, determine the marketing efficiency and estimate the transaction costs affecting the marketing efficiency of apple fruit marketers in the study area.

METHODOLOGY

Study Area

Lagos State is located between latitudes $6^0$22'N and $6^0$52'N longitude 2^o42'E and $3^0$42'E. The state is located in the south-western part of Nigeria, covering a total area of 3,577 sqkm of which 22% of this area are lagoons and creeks, the state has a total projected population of 12,239,206 (National Population Commission, 2015). The state borders the Atlantic Ocean to the South, Ogun State to the North and East then stretches over 180km along the Guinea Coast of the Bight of Benin on the Atlantic Ocean. Generally, the climate conditions of Lagos State vary considerably according to month and seasons. The hottest month is March when average daytime temperature gets to 29^0C, and July is the coldest month with an average temperature of 25^0.

Lagos State was created on May 27, 1967 and made up of 20 LGAs namely: Alimosho, Ajeromi-Ifelodun, Kosofe, Mushin, Oshodi-Isolo, Ojo, Ikorodu, Surulere, Agege, Ifako-Ijaiye, Shomolu, Amuwo-Oodofin, Lagos Mainland, Ikeja, Eti-Osa, Badagry, Apapa, Lagos Island, Epe and Ibeju-Lekki. Although, the state is known to be more focused on trades, office jobs and so on; however, there are still certain agricultural practices are still observed in the state; such as fish farming (artificial and artisanal), pig farming, vegetable farming, soybean farming and poultry production.

Sampling Techniques and Sample Size

A two random sampling procedure was used in this study. The first sampling stage involved the purposive selection of five local government areas from the study area. This selection was based on the intensity of apple fruit marketing activities. A survey revealed the predominance of apple fruit traders in Ikosi-Ketu LG, Ojo LG, Alimosho LG, Oshodi-Isolo LG and Apapa-Iganmu LG in Lagos State. The second stage involved the random sampling of apple fruit traders in these areas for administering of questionnaire and oral interview.

A total of 25 apple fruit traders were randomly selected in Ikosi-KetuLGAout of the 33 traders that were identified. In Alimosho, a total of 13 respondents were randomly selected out of 15 that were identified as apple fruit traders, in Oshodi-Isolo a total of 25 respondents were randomly selected from a total of 30, out of a population of 20 apple fruit traders in Ojo, 17 were randomly selected, and in Apapa-Iganmu, 25 traders out of a population of 27 were randomly selected. To achieve this, the number of apple fruit traders was obtained from the chairmen of apple fruit traders association in Lagos state. Primary data was used to select the respondents.

Analytical Tools

The tools of analysis used in the study are:- Descriptive Statistics, Market Structure analysis, Marketing Margin Analysis, Inferential Statistics: Ordinary least square regression model and Likert-type Scale

RESULTS AND DISCUSSION

The socio-economic characteristics of the respondents considered in the study area include age, sex, marital status, household size, level of education etc.

The result of age distribution of the respondents in Table 1 showed that most of the respondents were not more than 30 years (38.83%). The mean age of the respondents in the study area is 35.5 years which implies that most of the apple marketers are young, agile and they are in productive age, this may enhances the performance of apple marketing in the study area.

The result of the gender distribution of the respondents as reported in the table revealed that 50% were males and 50% were females. The result indicated that apple marketing is a business of both gender, this might enhance the efficiency in marketing of the product.

The result of marital status revealed that most of the respondents are married (65.69%).The high percentage of married people is an indication of more responsible farming households in the study area. This indicated that most apple marketers are married and could have experience to manage the enterprise very well.

The result on the table 1 below shows that 46.08% of the respondents had secondary school education.

This result indicates that large number of the respondents is literate; this will help marketing strategies and boost the growth of their apple enterprise.

It was revealed that the distribution of respondents by the size of their household. It shows that most of the respondents having household size of not more than 5 members (53.64%). The mean households size is 5.8, indicating that respondents households in the study area had a moderate family size. This corroborate with findings of Oladejo (2016) in his work onValue Chain and Economic Analysis of Honey Production in Nkwanta North where 5.6 was reported as the mean household size of their respondents**.**

Result as presented in Table 1 revealed that most (47.06%) of the respondents claimed not more than 5years in apple business, which indicates that the marketers have spent relatively long period in the business. The average marketing experience was 6.6 years. It is expected that the higher the years of experience the more knowledgeable in the marketing techniques as well as rational in information utilization the respondents will be**.**

Table 1 also shows that 67.65% of the respondents' source for capital through personal savings, 11.76% obtains capital from relative/friends; about 8% source the capital from Cooperative/Credit and thrift society, used micro finance bank. This implies that the respondents sourced for credit through different means.

The result shows that 75.49% of the respondents claimed that there are conditions for entry into apple marketing in the study area while only 24.51% claimed that there exists no condition of entry into the market.

From Table 1, the result reveals that 64.71% of the respondents obtain price information from other sellers in the market, 32.35% claimed that price information are sourced from trader society and only 2.94% of the respondents source price information from other sources such as media etc.

In terms of market association, table 1 shows that 24.51% were not part of any marketing association, 75.49% of the respondents were in marketing association(s). This indicated that apple marketers in the study area were aware of the benefit that these associations can fetch them (This implies that the apple marketer that belongs to social organizations will benefit from periodic seminars, financial benefit and enlighten programme).

Table 1 also reveals that 76.47% of the respondents use hired motor as a means of transporting their products to the market, 11.76% uses wheel barrow, 6.86% uses their personal car to convey their product to the market while about 5% employ other means.

Table 1: Socio-economic characteristics of the apple fruit marketers

Variables	Frequency (n=102)	Percentage (%)
Age group		
<=30	40	38.83
31-40	33	32.04
41-50	24	23.30
51-60	5	4.85
Mean = 35.5		
Sex		
Male	51	50.00
Female	51	50.00
Marital status		
Single	31	30.39
Married	67	65.69
Divorce	3	2.94
Widowed	1	0.98
Education		
No formal education	9	8.82
Primary education	5	4.90
Secondary education	47	46.08
Tertiary education	39	38.24
Household size		
<=5	80	78.43
6-10	22	21.57
Mean = 4.5		
Marketing Experience		
<=5	48	47.06
6-10	39	38.24
11-15	15	14.71
Mean = 6.6		
Source of capital		

Personal savings	69	67.65
Friends/relative	12	11.76
Credit and thrift societies	8	7.84
Microfinance Banks	13	12.75
Entry condition		
No	25	24.51
Yes	77	75.49
Price information		
From other sellers	66	64.71
From traders society	33	32.35
Others	3	2.94
Member of association		
No	25	24.51
Yes	77	75.49
Transportation		
Hired motor	78	76.47
Wheel barrow	12	11.76
Personal vehicle	7	6.86
Others	5	4.90

Source: Field Survey, 2019.

Pattern of Sellers' Concentration (Structure) and conduct of apple fruit marketers

Amandine *et al*(2012) said that the market structure consist of the characteristics of the organization of a market which seems to influence strategically the nature of competition and pricing within the market. While there is no universally accepted method of analysing the elements of market conduct, parameters such as number and size of buyers and sellers, organization of apple fruit traders, identification of the different types, varieties and forms, market information, marketing channel, and entry and exit conditions were analysed to examine the influence of the existing market structure on the market conduct.

Sales Volume and Market Share

The apple market structure in the study area was analysed using gini Coefficient model (table 2). The variation in revenue generated among the sellers revealed that a total of ₦592218.18 was generated among the 102 apple marketers. 24.51% of the respondents sold less than 100 cartons of apple ₦75820 contributing 0.128% of the total sales volume. Furthermore, 39.22% of the marketers had sales ranges between 101-500 cartons, and contributed ₦111547.62 to the total revenue generated (18.8%) and 32.68% sell above 500 cartons. On the average 448.94 cartons of apple was sold per month by respondents in the study area.

Table 2: Distribution of Respondents by Quantity Sold

Quantity sold (cartons)	Frequency	Percentage (%)
<=100	25	24.51
101-500	40	39.22
501-1000	19	18.63
1001-2000	17	16.67
Above 2000	1	0.98
Total	102	100.00

Source: Field Survey, 2019.

Concentration Ratio

The concept of concentration ratio was used to determine the structure of apple marketing in the Lagos State. The concentration was therefore computed by computing the total monthly sales of the largest four firms and then divided by the total monthly sales of the traders. The result revealed a concentration ratio of 47.7%, indicating the weak oligopolistic nature of the market. An oligopolistic market is a market where firms are engaged in selling differentiated products, they are price makers and a simple move by one firm or trader can have an influence on the others.

$$\text{Concentration Ratio} = \frac{23610530.65}{49482530.65} \times 100$$

Concentration Ratio = 47.7%

Analysis of Apple Market Structure Using Gini Coefficient

The gini Coefficient calculated was 0.856, which is close to unity (1). Mathematically, it implies that there were very high variation of sales and revenue generated among the respondents as 0.856 is close to 1 (value of unequal distribution). This is a demonstration that the market is tending toward monopoly characterized by large number of buyers and large number of sellers such that the action of a

seller would not have significant influence on the marketers.

Table 3: Result of Gini Coefficient Analysis

No of carton sold	No of sellers	Prop of sellers (X)	Cum prop of sellers	Average monthly sales	Prop of sales (Y)	Cum prop of sales	XY
<= 100	25	0.25	0.25	432657.89	0.0087	0.0087	0.002175
101-500	17	0.17	0.42	2404250	0.0486	0.0573	0.008262
501-1000	19	0.19	0.61	8236211	0.1664	0.2273	0.031616
1001-2000	40	0.38	0.99	12537411.76	0.2534	0.4771	0.096292
Above 2000	1	0.01	1.00	25872000	0.5229	1.0000	0.005229
Total	102			49482530.65			0.143574

Source: Field Survey, 2019

GC = 1-∑XY

1 - 0.143574 = 0.856

Market Participants on Lorenz Curve

The results presented in Figure 2, showed the Lorenz curves which graphically depict the nature of seller concentration that was quantitatively analysed using gini coefficient. As shown on the graph, the cumulative market share was plotted on the y axis while the cumulative proportion of the total number of traders was plotted on the x axis. A perfectly equalized degree of concentration is depicted by the straight diagonal line y=x called the line of perfect equality or the 45^0 line. The degrees of inequalities in market share among the marketers are shown by the curves which form an arc with the 45^0 line (line of equality). The extent of deviation of these curves from the line reveals the level of seller concentration among the marketers and the nature of market competition in the study area.

The value of gini coefficient (0.856) for apple marketers in Lagos State is tending towards unity indicating that there is inequality or high level of seller concentration at this level. Furthermore, from the Lorenz curve (Figure 1) the extent of deviation of the curve from the line of equality shows an imperfect market competition (85.6% gini), such that no particular apple market participant is large enough to have the market power to set the price of apple.

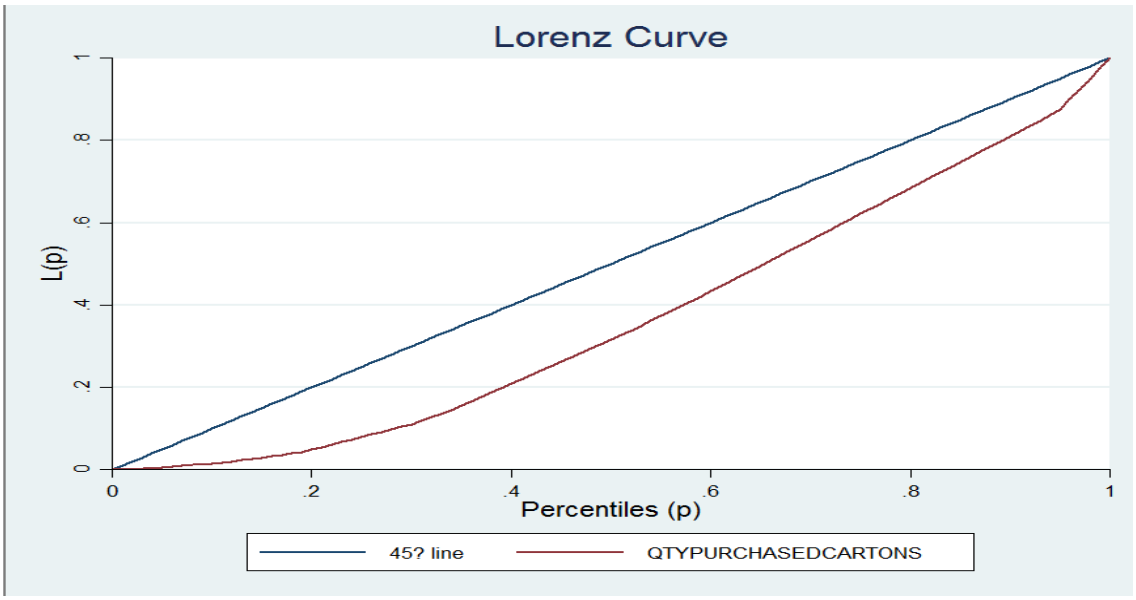

Figure 3: Presentation of Lorenz Curve Analysis

Organization of apple fruit market participants

Most of the apple fruit in Nigeria is imported into the country from South Africa while the remaining few is what is grown locally in Jos. The study area is one of the major areas which the bulk of the apple fruit is imported into the country through Apapa port. However, some traders in Apapa-Iganmu, Alimosho and Oshodi-Isolo go to South Africa to purchase the produce on their own. The traders have little or no contact with the farmers or producers.

Ijora market is the bulking market of the imported fruit in Nigeria. It is in this market (Ijora market) that most wholesalers purchase the fruit to retail or wholesale again at other markets. At this market, there are wholesalers from different parts of the country some in person while others use the services of commission agents. The use of agents by these agents is a further indication of the relationship that exists between the traders. As stated in their words, the wholesalers use agents because they know the market and have a better rapport with the importers. They can therefore negotiate better prices than the wholesalers themselves.

Identification of the different types, varieties and forms of apple fruit

The most widely traded varieties of apple fruit in the surveyed markets are Golden Smith and Red Delicious which are available in all the five LGAs. However, there are other varieties such as Fuji, Gala, Golden Delicious, and Pink Lady.

The marketing participants used the following methods to identify the different varieties, namely: colour, size, shape and taste.

Market information

Market information is the knowledge that enables buyers and sellers to take decisions in the market. Available market information will allow buyers and sellers to take more rational decisions. The traders and buyers usually take advantage of market situations through negotiations and haggling of price. According to the wholesalers, apple fruit has a fairly regular price and a vast majority of the traders know when prices are likely to go up; especially during the Muslim holy months of Ramadan due to the high demand of the fruit in these periods when Muslims fast.

Marketing channel of date palm

The apple fruit marketing channel identified in the study area revealed the participation of 5 major actors. These participants were involved in the channelling of apples from the farmers to the consumers. At every stage of the channel the participants perform marketing functions such as loading/offloading, transportation, grading and storage. The participants include importers, wholesalers, commission agents, retailers and consumers.

Entry and exit conditions

This refers to the ability of a firm to enter or leave the market at any time. There were no apparent restrictions to entry into and exit from apple fruit marketing as is the case with most agricultural marketing. However, there was a requirement of high start-up capital in becoming a wholesaler. This corroborates with the findings of Taru*et al* (2010). He stated that entering into or moving to another status in Gum Arabic marketing is influenced by size of capital. An exception to this condition was found in the traders at Jakande and AgbadoOke-Odo markets where they have entry conditions such as compulsorily joining the association, agreements on standard selling price based on the same standard method of measurement and acquisition of shop shade from the chairman of apple fruit marketers association. There are no exit conditions from the market. Gross Margin Analysis

Gross Margin (GM) is used in estimating the profitability of apple marketing. It is calculated as difference between Total Revenue (TR) and Total variable cost (TVC).

TR is quantified as: quantity of apple sold (cartons) × price per unit

TVC is quantified as total cost of all variable inputs like purchase/ production, transportation, labour, hired labour, paper Label (branding), advertisement etc.

TFC include cost associated with marketing tools and equipment's like; containers, drums, plastic buckets etc.

Net Marketing margin = GMM – Total marketing cost

NMM = MM – TMC

TMC = ₦4,269,541.0k

MM = ₦4,902,877.0k

Therefore:

NMM = ₦4,902,877.0k - ₦4,269,541.0k

NMM = ₦633,336.0k

4.3.1 Profit Analysis

Profit (π) = NMM – TFC

Π= ₦633,336.0k – ₦12,583.25

Profit = ₦620752.75k

Profit per carton of apple sold = $\frac{620752.75}{448.94}$ = ₦1382.71

On the averagely, about ₦1382 was the gain per carton of apple in the study area which shows that the apple marketing in the study area was a lucrative and profitable agriculture business.

Benefit Cost Ratio Analysis

Benefit cost ratio (BCR) is a ratio to determine the profitability of the apple.

BCR= MM/TMC

MM = 4,902,877.0

TMC = 4,282,124.25

BCR = $\frac{4902877.0}{4282124.25}$

BCR = 1.14

Considering the benefit cost ratio it revealed that for every ₦ 1 invested, the apple marketers will make returns of ₦1.14k, because the BCR is greater than 1. Therefore, apple marketing is profitable in the study

area. The result corroborates the findings of Onu, &Iliyasu, (2008). in profitability analysis of marketing grains in Adamawa State, Nigeria.

Marketing Efficiency

The value added by each respondent are computed as Price (in ₦) received by the respondents (price paid by the consumers) less the price received by the preceding marketer in the supply chain.

When ME = 100%, it implies that the respondents just recovered the cost incurred in carrying out the marketing services, ME > 100% implies that the respondents covered the cost of marketing and made a margin above the 100% (higher value of ME denotes higher level of efficiency), while ME < 100%indicates that the respondent is operating at a loss.

M.E = $\frac{MM}{TMC} \times 100$

Where ME= Marketing Efficiency

MM= Marketing Margin

TMC= Total Marketing Cost

MM = 4,902,877.0

TMC = 4,282,124.25

M.E = $\frac{4902877.0}{4282124.25}$ x 100

M.E = 114%

M.E. > 100% implies that the respondents covered the cost of marketing and made a margin above the 100%, hence apple marketers performed associated functions efficiently in the study area.

Transaction costs affecting the marketing efficiency of apple fruit marketers

Semi- log functional form was fitted in the estimation of ordinary least square regression analysis. Regression results revealed that storage cost, loading cost, transportation cost and market levy were the significant variables. Storage cost, loading cost and transportation cost and have a negative relationship on the marketing efficiency of the apple marketers. This was in line with the a-priori expectation for the study. R^2 was 0.47, indicating that the model specify could explain up to 47% of variation in the dependent variable included in the model. The f-value was 52.34 and significant at 1%. This shows the goodness of fit of the model.

The coefficient of transport cost was negative and statistically significant at 10% level of significant. The result implies that a unit increase in the cost of transportation will decrease marketing efficiency of apple marketers in the study area. This indicates that higher cost on transportation reduces apple marketing efficiency in the study area. So also, storage cost shows a negative coefficient and statistically significant at 5%. This indicates that an increase in the storage cost incurred by apple marketer, there will be reduction in marketing efficiency of the marketers.

Also, the coefficient of market levy showed a positive significant value, implying that a unit increase in the market levy will increase marketing efficiency; this indicated that an increase in the market levy of apple marketers, there is always increment in the marketing efficiency of apple marketing in the study area.

Table 4: Multiple Regression Analysis

Marketing cost	Coefficient	Std. Err.	T-value	Prob /t/
Storage cost	-3.303755	1.649574	-2.39	0.017**
Loading cost	-0.3444064	0.132045	2.61	0.009***
Transport cost	-8.32471	4.772898	-1.74	0.092*
Electricity cost	-0.339781	2.38744	-0.14	0.888
Market levy	14.44829	4.752238	3.04	0.005***
Constant	145.4631	70.01957	2.08	0.047
R^2 = 0.47				
F- value = 52.34				

Source: Field Survey, 2019*, ** and *** are significant at 10%, 5% and 1% respectively

Constraints to the marketing of apple fruit in the study area

The result as presented on Table 5 shows that more than 60% of the respondents indicated that high cost of transportation of apple in the study area poses a serious threat to the marketing of the product. About 42% posited that poor marketing information problem is severe in apple marketing. Insufficient storage is another constraint identified by the respondents affecting apple marketing in the study area; this is evident as 46.08% of the respondents agreed that it is a major threat to the marketing of apple in the study area. 79.41% of the respondents agreed that low patronage is another constraint to apple marketing, and 48.04% agreed that bulkiness also constitute problem to apple marketing in the study area. Considerable number (44.12%) of the respondents disagree to the fact that inadequate supply of apple is a constraint in marketing the product in the study area, so also, lack of credit (73.53%), perishability (47.06%), and price fluctuation (87.25%). The table also showed the weighted score of each attitude and the mean score. Any constraint faced by marketers with a mean score greater or equal to 3 will be regarded to as disagree and a mean less than 3 will be regarded to as agree. Therefore, high cost of transportation, poor marketing information, insufficient storage, low

patronage and bulkiness are the major constraints faced by apple marketers in the study area

Table 5: Constraints faced by apple marketers in the study area

Variables	Extremely serious	Very serious	Moderately serious	Mild	Not serious at all	Weighted score	Mean score
High cost of transport	34 (33.33)	34 (33.33)	18 (17.65)	10 (10.78)	5 (4.90)	225	2.205882
Lack of credit	4 (3.92)	14 (13.73)	9 (8.82)	45 (44.12)	30 (29.41)	389	3.813725
Price fluctuation	0 (0.00)	0 (0.00)	13 (12.75)	34 (33.33)	55 (53.92)	450	4.411765
Insufficient capital	0 (0.00)	4 (3.92)	21 (20.59)	32 (31.37)	45 (44.12)	424	4.156863
Perishability	9 (8.82)	9 (8.82)	36 (35.29)	26 (25.49)	22 (21.57)	349	3.421569
Poor market information	18 (17.65)	25 (24.51)	35 (34.31)	19 (18.63)	5 (4.90)	274	2.686275
Insufficient storage	28 (27.45)	19 (18.63)	29 (28.43)	16 (15.69)	10 (9.80)	267	2.617647
Low patronage	34 (33.33)	47 (46.08)	21 (20.59)	0 (0.00)	0 (0.00)	191	1.872549
Inadequate supply	19 (18.63)	8 (7.84)	30 (29.41)	41 (40.20)	4 (3.92)	309	3.029412
Bulkiness	18 (17.65)	31 (30.39)	43 (42.16)	10 (9.80)	0 (0.00)	249	2.441176

Source: Field Survey, 2019 (Percentage in parenthesis)

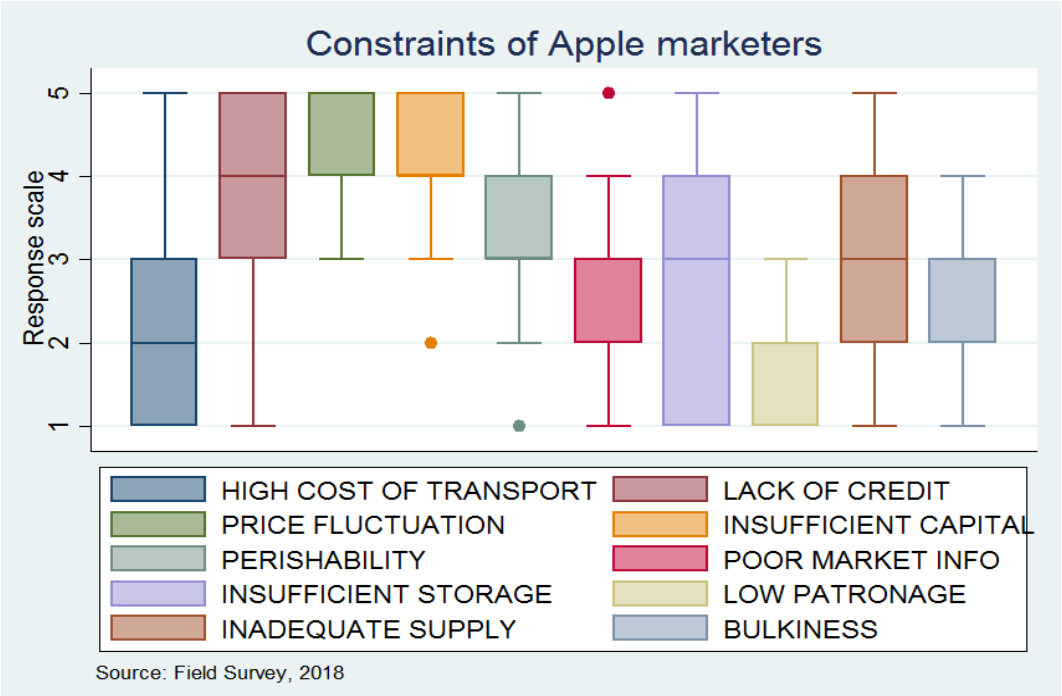

Figure 4: Box plot showing constraints faced by apple marketers

SUMMARY

The study examined the market analysis of apple fruit in selected markets of Lagos State Nigeria**.** The specific objectives were to determine the structure of apple fruit marketing in the study area; determine the conduct of apple marketing, evaluate the marketing margin of apple fruit, determine the marketing efficiency and estimate the transaction cost affecting the marketing efficiency of apple fruit marketers in the study area. Random sampling technique was employed in selecting the respondents. Primary data for the study were collected using copies of structured questionnaire, administered to 102 respondents. Data were analysed using descriptive statistics, marketing efficiency, budgetary analysis, Gini- coefficient and regression analyses.

The results of frequency distribution show that 38.83% were not more than 30 years with the mean age of 35.5 years, 50% of the respondents were males and 50% were females, about 66% of the respondents were married, 53.64% of the respondents having household size of not more than 5 members, The mean households size is 5.8 most (47.06%) of the respondents claimed not more than 5years in apple business, The average marketing experience was 6.6 years.

The results further revealed gross margin of ₦633,336.0k while the profit of apple marketing in Lagos state with the mean is ₦620752.75k per month. The benefit cost ratio is 1.14 which means for every ₦1 invested in a business you make a profit of 14k which means apple business is very profitable in the study area. Marketing efficiency is 114% which implies that the respondents covered the cost of marketing and made a margin.

The value of gini coefficient (0.856) for honey market in Lagos state is tending towards unity indicating that there is an inequality or high level of seller concentration at this level. From the Lorenz curve, the extent of deviation of the curve from the line of equality shows imperfect market competition. (85.6% gini) such that no particular apple market participant is large enough to have the market power to set the price of apple, but only a few of the marketers handle the major share of the quantity transacted at the market.

The semi-log functional form that was fitted to estimate the transaction costs influencing the marketing efficiency of apple marketing in the study area. The study revealed that transportation cost and market levy were the significant variables and have a negative relationship on the marketing efficiency of the apple marketers. This was in line with the a-priori expectation for the study. R^2 was 0.47, indicated that the model specify could explain up to 47% of variation in the dependent variable included in the model.

CONCLUSION

The following conclusions were drawn from the study concluded that:

a. Market structure for apple in the study area tends towards monopoly.
b. Apple marketing is a profitable enterprise in the study area
c. Apple marketing functions are performed efficiently in the study area

RECOMMENDATION

a. This study recommends that Government and Non – Governmental Organization should assist marketers through enlightenment campaigns, adult education seminars and workshops. This will improve the marketing system in all ramifications.
b. Transportation cost reduces marketing efficiency, therefore effort should be made by stakeholders to assist trader on cost and means of transportation in the study area.

REFERENCES.

Amandine C., Pierre G., Marinus J.M. Smulders, Isabel Roldan-Ruiz, Francois Laurens, Bruno Le C., Anush N., Joanne C., Marina O., Laurence F., Ivan G., Xiu-Guo Z., Maud I. T., &Tatian, G. (2012). "New Insight Into the History of Domesticated Apple: Secondary Contribution of the European Wild Apple to the Genome of Cultivated Varieties". *PLOS Genetics.* 8 (5): e1002703.

Boyer, J. &Riu, R.H. (2004). "Apple phytochemicals and their health benefits". *Nutrition Journal.* Cornell University, Ithaca, New York 14853-7201 USA: Department of Food Science and Institute of Comparative Environmental Toxicology. 3 (1): 5.

FAO, (2003). Agricultural Production: Primary crops. http://www.fao.org. p 40-50

FAOSTAT, UN Food & Agriculture Organization, Statistics Division (2017). *Apple production in 2016; Crops/World Regions/production Quantity*. Pg 10-16

Ferdman, R.A. (2016). "A clever tweak to how apples are sold is making everyone eat more of them". *The Washington Post.Pg 14- 23*

Giroh, D. Y., Umar, H. Y. &Yakub, W. (2010). Structure, conduct and performance of farm gate marketing of natural rubber in Edo and Delta States, Nigeria. African *Journal of Agricultural Research*, 5(14): 1780-1783

Lagos State Bureau of Statistics www.physicalplanning.lg.gov.ng

National population commission 2015 – Lagos state population www.population.gov.ng/index.phplagos-state

Oladejo, J.A. (2016): Profitability Analysis Of Cassava Tuber Marketing In Oyo State, Nigeria: Implication For Sustainable Development Goals; *Sci. Agri.* 16 (2): 67-73

Onu, J. I., &Iliyasu, H. A. (2008). An economiac analysis of the food grain market in Adamawa State, Nigeria. *World Journal of Agricultural Sciences,4*(5): 617-622.

Taru, V.B., Jonathan R. and Lawal H. (2010). Structural Analysis of Paddy Markets in Southern Part of Taraba State, Nigeria. *Journal of Agriculture and Social Science*., 6: 110–112.

Teka A.G (2009). Analysis of Fruit and Vegetable Market Chains in Alamata, Southern Zone of Tigray: the Case of Onion, Tomato and Papaya. Unpublished M.sc Thesis School of Graduate Studies Haramaya University, Ethiopia. Pg 22- 30