

Analysis of Mean Relative Marketing Margins for Technical and Special Palm Oil across Three Urban Markets in Cross River State, Nigeria

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Abstract – The study carried out a Comparative Analysis of Mean Relative Marketing Margins for Technical and Special Palm Oil across the three case-study markets of Akim, Ika-Ika Oqua Markets in Calabar Municipality and Bogobiri market in Calabar South Local Government Area respectively. Specifically, this study was to find out the market organisation and structure in the three markets, estimate and compare the mean relative marketing margins for technical palm oil (TPO) and special palm oil (SPO) over time and to find out whether the prices of TPO and SPO were strongly linearly correlated. Data for this study were primary data collected from forty – four purposively sampled traders. The differences between and among means model and correlation analysis were used for the analysis. Results from the research showed that the palm oil traders in the three markets (Akim, Ika-Ika Oqua and Bogobiri) belonged to unions known as beaches, the structure and organization was found to be oligopolistic in nature. The sum of N10,000, N30,000 and N15,000 were paid as membership registration fee across the three markets respectively, while the selling prices of TPO and SPO was determined by the Unions. The mean relative marketing margin for TPO was 9.96%, 8.86% and 37.19% in Akim, Ika-Ika Oqua and Bogobiri while that of SPO was 11.25% and 12.39% in Akim and Ika-Ika Oqua respectively. The price for TPO and SPO were found to be linearly correlated and the correlation coefficient was 0.997 and 0.992 for Akim and Ika-Ika Oqua respectively.

Keywords – Marketing Margin, Correlation Analysis, Market Structure, Oligopoly.

I. INTRODUCTION

Prior to the One on-set of the Nigerian civil war (1967-1970), Nigeria was the largest producer and exporter of palm produce (palm oil and palm kernel) which are joint products (9). (13) asserted that the significance of the of palm oil and palm kernel export production to Nigerian Economy emanated from two factors; Firstly, the contribution of the industry to export earnings and secondly, the fact that export production of oil palm products was a major source of income to a substantial proportion of the rural agricultural population in Southern Nigeria.

Apart from Export trade, internal trade on palm oil had long been established in Nigeria. According to (11), oil palm products were among the first Nigerian commodities to enter the European Market with 32 barrels of palm oil included in the cargo taken by Captain Welsh in his second voyage to Benin in 1590.

(11) also asserted that a very large proportion of palm oil produced was absorbed in internal trade. The edible oil produced for this purpose was dispatched in a considerable scale from the oil palm belt to other part of Nigeria.

Over the years, the total quantity of palm oil transported from Southern part to the Northern part of Nigeria has been on the increase. (4) reported that the total quantity of transported from east to northern Nigeria in 1957 and 1965 was 86,363 tonnes and 95,964 tonnes respectively. (3) reported that the estimated quantity of palm oil purchased by the Umuahia food stuff traders union in 1988 and 1989 was 20,275.2 and 25,587.6 tonnes respectively. From the figure above, it is evident that internal trade in palm oil has always been on the increase.

For palm oil supply to take place between two locations, there must exist a marketable surplus in one area and an effective demand or deficit of the product in another area.

The major palm oil producing areas in Cross River State include; Akamkpa, Biase, Akpabuyo, Odukpani, Ikom, Obubra, Obudu and Ogoja. Calabar Municipality and Calabar South where the three markets of Akim, Ika-Ika Oqua and Bogobiri are located are not major producer of palm oil but serve as central markets where this products are turned in from the local markets for onward movement to other parts of the country.

(12) opined that palm oil is produced by many peasant farmers scattered on many small size holdings. The middlemen buy these products from the villages and transport them to urban palm oil markets where the produce are bought by other set of middlemen who transport the produce in drums to the northern part of the country.

In spite of the numerous uses of palm oil, it's price is never stable because studies have shown that the prices of palm oil is lower from January to June period and higher between July to December, thus prices fluctuates from time to time due to the market forces of demand and supply. Consequently market intermediaries have responded to fluctuating palm oil prices by buying when the quantity supplied is higher than the market demands. Storing the commodity during the period of low prices and selling them from stock during the period of high prices (15).

In Cross River State, palm oil is produced across the aforementioned local governments and transported to Akim, Ika-Ika Oqua, via Bogobiri market to the northern part of Nigeria.

Every market has an organizational structure that is that are likely to affect market pricing. (1) asserted that market

structure consist of those factors that are believed to influence the nature of competition and process of price formulation. The structure of a market plays an important role in determining the efficiency of market organization, price spread and margins throughout the distribution chain (6). Owing the important role that market structure play in the efficiency of a market, (5) identified four basic market models that operate in every market system to include; perfect competition, pure monopoly, monopolistic competition and oligopolistic competition. Considering the nature of the palm oil market unions set up in the various markets, it is obvious that these unions tend to incline to the oligopolistic structure which we will find out latter in the course of this study.

Apart from studies carried out by (3) on interstate marketing of palm oil and (2) who studied the marketing of palm oil in Umuahia, there is no published literature on the market structure and organisation with respect to palm oil trade between south and northern Nigeria.

The specific objectives of the study are to;

(i) find out how the palm oil markets are organised and structured in Akim, Ika-Ika Oqua and Bogobiri respectively.

(ii) Estimate and Compare the mean relative marketing margin for special palm oil (SPO) and technical palm oil (TPO) in the three markets over time.

(iii) find out whether the prices of special palm oil and technical palm oil are not strongly correlated.

II. RESEARCH METHODOLOGY

Data for this study were collected from purposively

Table 1: Analysis Of Variance Table

Source of Variation	SS	DF	MS	F-Value
Between samples (treatments)	SSTR	c-1	$\frac{SSTR}{(c-1)}$	$\frac{MSTR}{MSE}$
Between blocks	SSBL	r-1	$\frac{SSBL}{(r-1)}$	$\frac{MSBL}{MSE}$
Within samples (error)	SSE	n-c	$\frac{SSE}{(r-1)(c-1)}$	$\frac{MSE}{MSE}$
Total variation	SST	n-1		

Source: Allen Webster, 1992

The price correlation model was used to test if the selling prices of the commodities were strongly linearly correlated by using the equation stated below;

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} \quad (3)$$

Where;

r = correlation coefficient

x = deviation from the selling price of technical palm oil in one market from the mean

y = deviation from the selling price of special palm oil from the mean.

The significance of the estimated correlation coefficient (r) was tested using the formula below;

selected traders across the three case-study markets of Akim, Ika-Ika Oqua and Bogobiri markets from whom the quantities and prices of special palm oil and technical palm oil were collected over a period of 52 weeks.

The ANOVA model was used to estimate the difference among the mean relative marketing margin for special and technical palm oil in the different markets.

In the ANOVA model, the treatments were the commodities while the blocks were the weeks. We also used the two factor analysis without replication. The model took the form specified below;

Relative marketing margins (MMR):

These are defined in terms of ratio of the absolute marketing margin as the unit price at which the product is bought;

$$MMR = (USB - UBP)/UBP \quad (1)$$

Where:

USP is the unit selling price

UBP is the unit buying price

The least significance difference (LSD) is computed by using the formula

$$SD_{\alpha} \text{ at } 5\% (1\%) = \sqrt{\frac{2(MSE)F_{\alpha 1, n-c}}{r}} \quad (2)$$

(Webster, 1992)

Where,

c = number of treatments

r = number of observations in each block (weeks)

n = total number of observations

SSTR = sum of squares treatments

SSB = sum of squares blocks

SSE = sum of square error

$$t = r \frac{\sqrt{n-2}}{\sqrt{1-r^2}}$$

Where n = sample size (number of weeks)

III. RESULT AND DISCUSSION

Palm Oil Market Organization and Structure

The palm oil market structure in the three markets under study have similar oligopolistic structure even though some slight difference exist in the dues collected by the various organizations. Below is a tabular presentation of their operations;

Table 2: Palm oil marketers registration fee and membership across the three markets

ITEMS	IKA-IKA OQUA	AKIM	BOGOBIRI
Membership	30	45	30
Registration fee	N30,000.00	N10,000.00	N15,000.00
Dues	N400	N500	N400
Drinks	2 crates of beer, 1 bottle of wine	2 crates of beer, 1 bottle of wine	2 crates of beer, 1 bottle of wine
Fine	N1,200	N1,500	N1,500
No. Of executive members	6	7	5

Source: Compiled from field study 2004/2005.

Organization and Structure of Palm Oil Marketers across the Three Markets

Table 2 above shows the membership registration and the organizational structure of palm oil marketers across the three case-study markets of Akim, Ika-Ika Oqua and Bogobiri. Going by the presentation above, it is obvious that there is a strong union among the oil palm traders in each of the market, making it look like a cartel. These Unions are responsible for fixing of the buying and selling prices of palm oil in each of the markets taking into consideration the relative cost in sister markets commonly referred to as “beaches”. These various levels of regulations exhibited across the three markets makes the markets to assume the status of an oligopolistic market as against the perfect competitive markets that are obtainable for most products. This situation conforms to the assertion by (7) that oligopolistic firms sometimes forms associations or cartels to agree on prices, level of quantity of product and division of profits.

Table 3: Mean Percentage Marketing Margins for Special Palm Oil and Technical Palm Oil

Markets	Special Palm Oil	Technical Palm Oil	Differences
Akim	11.25	9.96	1.29 ^{NS}
Ika-Ika Oqua	12.39	8.86	3.72 ^{**}
Difference	-1.14 ^{NS}	1.1 ^{NS}	
Bogobiri		37.19	

Note: ** denotes significance at 5%

NS denotes not significant

LSD at 1% (5%) = 2.99 (2.28)

Source: Field Study

Table 3 presents the mean relative marketing margins for special palm oil (SPO) and technical palm oil (TPO) for Akim and Ika – Ika Oqua palm oil markets as well as technical palm oil for Akim, Ika-Ika Oqua and Bogobiri markets over time. The mean relative marketing margin for SPO and TPO at Akim market shows that there was no significant difference at the 10% level of significance, reason being that SPO is sold to retailers only in Akim Market. In Ika-Ika Oqua market, the difference between the mean relative marketing margin for SPO and TPO was significant at 1% level, implying that the quantity of TPO sold in this market is quite than that of SPO. The total gross margin from the sale of TPO is consequently higher than that of SPO.

Taking a closer look at the sale of SPO in the two markets of Akim and Ika-Ika Oqua, it is obvious that the percentage relative marketing margin of the SPO was not significantly different in the two markets at 5% level of significance. On the other hand the mean percentage relative marketing margin for technical palm oil in Akim and Ika Ika Oqua market were not significantly different at the 5% level, but when the mean percentage relative marketing margin for Bogobiri market was considered, it showed that it had the highest margin of 37.19%. The mean percentage relative marketing margin of TPO in Akim and Ika-Ika Oqua were significantly less than that in Bogobiri at 1% level. This is the case because TPO has a wider use in the industries for manufacture of soaps, detergents etc. Also traders in Bogobiri incur huge cost in transporting of the commodity to the northern part of the country.

Price Correlation Analysis

Table 4 : Price correlation Matrix

	BTP ₁	BTP ₂	ASP ₁	ASP ₂	ISP ₁	ISP ₂	ATP ₁	ATP ₂	ITP ₁	ITP ₂
BTP ₁	1	0.564*	0.703**	0.697**	0.679**	0.666***	0.926***	0.999***	0.931***	0.997***
BTP ₂		1	0.615**	0.578	0.598*	0.493*	0.623*	0.556*	0.616**	0.570*
ASP ₁			1	0.992***	0.992***	0.966***	0.804**	0.700**	0.817***	0.705**
ASP ₂				1	0.969***	0.989***	0.750**	0.674**	0.759**	0.698**
ISP ₁					1	0.968***	0.801***	0.694**	0.802***	0.698***
ISP ₂						1	0.968***	0.665**	0.750***	0.666***
ATP ₁							1	0.924**	0.997***	0.926**
ATP ₂								1	0.921***	0.930***
ASP ₁									1	0.997**8
ASP ₂										1

Note:

* denotes significance at 10%

** denotes significance at 5%

*** denotes significance at 1%

Where

B is for Bogobiri market

A is for Akim market

I is for Ika-Ika Oqua market

TP₁ is the buying price of technical palm oil (TPO)

TP₂ is the selling price of technical palm oil (TPO)

SP₁ is the buying price of special palm oil (SPO)

SP₂ is the selling price of special palm oil (SPO)

Table 4 above presents the price correlation matrix for special palm oil and technical palm oil. The result presented above implies that the buying and selling prices of both special and technical palm oil within each market are very strongly linearly correlated as correlation coefficient ranges from 0.92 to 0.97.

RECOMMENDATIONS

Based on the findings enumerated above, the following recommendations are made. Activities of palm oil marketing unions have to be closely monitored by Government regulatory agents so as to check the excessive exploitation of palm oil producers which can go a long way to disenchant palm oil producers. Palm oil traders should go into more of buying and selling of technical palm oil which has a high mean relative marketing margin than the special palm oil for them to get quick turnover. From the analysis it was evident that the market prices were strongly linearly correlated especially for Akim and Ika-Ika Oqua which had a correlation matrix as high as 0.992 and 0.997 respectively.

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