



## WEIGHT AND MEASUREMENT ISSUES IN RETAIL MARKETING OF FRESH TOMATOES: EVIDENCE FROM OSUN STATE, NIGERIA

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### ABSTRACT

This study investigates the activities of the marketers of fresh tomatoes especially, the weights and measurements aspects of the market institutions in Ife Area, Osun State, Nigeria. The problem here is a standardization problem in marketing and it has significant effects on the consumers of the product. Using primary data collected from 60 randomly selected marketers of Tomatoes, the study examined the types of weights and measures used in the markets under study and assessed the various policies guiding the weights and measurements in terms of awareness and adherence. Also, the profit margins of the marketers were estimated and the determinants of these margins among the marketers were modeled using multiple linear regression analysis. The results show that in spite of high level of awareness about government policies guiding weights and measures, the policy was not well adhered to because majority of the marketers in the area prefer other types of illegal measures in the study area. Furthermore, profit margins are high and are affected by some socio-economic characteristics of the marketers. It was therefore recommended that volume measures should be done away with and weights measures adopted with a fixed price for each unit of weight measure to reduce difficulties in buying and selling of fresh Tomatoes.

**Keywords:** weights, measures, fresh tomatoes, Nigeria.

### INTRODUCTION

The Nigerian Government, as a result of the persisting food shortages and increases in the poverty level as well as food insecurity of Nigerians, initiated policies to enhance agricultural production as a means of ameliorating the situation. Among the wide range of agricultural crops, vegetables occupy an important place because of their economic potentials. However among different vegetables grown, tomato very clearly stands out as the most important both in scale of production and level of consumption. Whereas, most the other vegetables have restricted demand in Nigeria, as they are consumed exclusively only by the urban affluent/elite class, the demand for the tomato is universal, for it is consumed by both the affluent/elite and poor classes (Adepetu, 2005). Generally the tomato is regarded as the vegetable of the largely poor masses. Furthermore tomato has great poverty alleviation capacity. Its production, handling, transportation, distribution and marketing employ a large number of people.

However, the increased production of tomatoes has not translated to increased household access to fresh tomatoes in the market. This could be traced to market related factors as most of the consumer markets in Nigeria are still not developed, particularly in the areas of weights and measures that more often than not leave consumers to their licks and haggling capacities in securing a good deal. Thus, weights and measurements are critical aspects of the market institution because it is the tool with which the sellers come into contact with the buyers (Ezendima *et al.*, 2005). It determines the profit margin of the marketer, producer and also the utility level of the consumer. However, a lot of sharp practices exist in the market, more on the part of the retailers, with the intentions of cheating

both the farmers and the consumers. Most of the sharp practices by the marketers are in the areas of weights and measurements as many of these marketers buy products from the producers with bigger measures and sell to the consumers with adjusted measures, thus, either way, the pendulum swings in the favor of the marketers because they pay less for more and gets more income for selling less products.

As a result of this, the farmers' benefit is reduced and the utility of the consumers is reduced as well. If the activities of these marketers are not checked it can lead to the commodity chain being stifled, while the producers being the farmers get discouraged due to low returns, the consumers' spending power is reduced; all these eventually make food security a mirage (Hernandez *et al.*, 2007). To this end, so many governments at the State and Local Government levels have initiated programmes to monitor weights and measurements used in the selling and buying of staple foods because it has great ramifications on food security and farm profits. For instance, many measures having the seal of the State government have been introduced in Osun State to regulate disparities and sharp practices associated with weights and measures in the marketing of staples in the State. In the light of the above, this study aims to identify the various types of weights and measures used in the marketing of fresh Tomatoes in the study area as well as examine the various policy measures regulating weights and measurements in their marketing. Furthermore, the study attempts to determine the market-related factors that affect the marketing margins of the marketers, with particular emphasis on weights and measures.



## Hypothesis

H<sub>01</sub>: There are no significant differences in the types of weights and measures used by the marketers.

H<sub>02</sub>: The weights and measures used in purchasing fresh tomatoes do not affect the marketing margins of the marketers.

H<sub>03</sub>: The weights and measures used in selling to consumers do not affect the marketing margins of the marketer.

## MARKETING CONCEPT

Marketing in simple words is the interaction of forces of demand and supply irrespective of the physical location of the buyer (Adekanye, 1988). It can be seen from this definition that the main elements of marketing are the buyers and the sellers. Marketing can also be said to be the performance of business activities that direct the flow of goods and services from producers to consumers or users (American Marketing Association, 1960), from this definition we now bring in the concept of agricultural marketing which is where the producers, processors, distributors and the consumers meet. Marketing is very important in agricultural production; it determines the success or failure of most agricultural production enterprise. Which ever definition is used, there are five clear major concepts under marketing and they are production concept, product concept, selling concept, marketing concept and societal marketing concept (McCullough *et al.*, 2008). All the concepts have one thing in common that is the presence of a producer, a product and a consumer. Therefore, for marketing to take place successfully there must be a producer, consumer and a product.

It is of utmost importance to talk about the commodity chain whenever analyzing the marketing of any commodity. Adepetu (2005) and Portal *et al.*, (2001) in their different studies asserted that bulk of the fresh Tomatoes sold in Nigerian markets are produced in the northern part of country, particularly in the more climatically favourable Jos plateau and that the typical marketing chain for fresh Tomatoes consists of; the producers (the farmer in the rural area who sells it fresh to the marketer or to the processors as the case maybe). While the processors transport to a few processing factories that are available, the marketers transport to the market. The marketers include the wholesalers, the retailers and the ultimate consumer follow in this order. We are going to be analyzing the problems faced by the marketers of fresh Tomatoes with emphasis mainly on the weights and measurements aspect at the retailer-consumer interface, which falls under the standardization issues in marketing.

Weights and measures play a key role in the marketing of most agricultural products because they are the tools with which the sellers come into contact with the buyers (Cunningham *et al.*, 2008). On the international scene agricultural products are usually marketed in

standard weights. However, in Nigeria fresh Tomatoes like most grains are sold in the market place with volume measures/baskets because the consumers do not trust the sellers and will like to observe while measuring is being carried out, but unknown to most consumers that the marketers have improvised ways of cheating them off few grains or Tomato fruits as the case may be.

Volume measures favors the marketers because it gives them the opportunity to manipulate or mutilate the measuring bowls/baskets to their own profit, that no matter how observant the consumer is, he will still get less utility for the agreed price. The various types of weights and measures used in the marketing of fresh Tomatoes vary from place to place within Nigeria. In the northern part of Nigeria measures such as the baskets in various un-standardized sizes are normally used while in the southwestern part of Nigeria, we have measures like the baskets, *kongo* (usually the government approved measuring bowl) and various sizes of metallic or plastic plates. It will be unfair to talk about weight and measures and not mention some of its usefulness which is the creation of market accessibility to the consumers (Ayinde, 2005). The measures have been designed in such a way that no matter the income level of the consumer, he has a corresponding measure to match his pocket. It has also helped most consumers in drawing up their food budgets that they don't buy in excess or too little. Some of the measures commonly used in the area of study are below.

### a) The metallic/plastic plates

These are the smallest measure used in Ife Area. The metallic measures are fabricated from metals into different sizes of plates. Other measures in this category are the plastic plates which are purchased from the market and are converted to marketing measures. Prices vary depending on the size of the measuring plate used and the production season as well the bargaining power of the consumer.

### b) The kongo/bowls

These are the next bigger measures after the metallic/plastic plates. The kongo is a plastic bowl that weighs between 1.4 kg to 1.8 kg when filled with fresh tomatoes. The Kongo is the recommended volume measure by the Osun State Government to curb sharp practices among the marketers of staple food. However, the retailers also improvised other plastic bowls that are either smaller or bigger than the recommended measure by the State Government. These measures command different prices depending on the size and the production season as well the bargaining power of the consumer.

### c) The baskets

This measure is normally used for wholesale purchase and it has an average weight about of 40-45kg when filled with fresh Tomatoes. The intercity marketers, who are usually responsible for the transportation of fresh Tomatoes from point of production (the North) use baskets that are packed in a specialized manner to sell to the



retailers and sometimes to the final consumers who buy in bulk for either commercial use (i.e., the restaurant operators) or for ceremonies.

## RESEARCH METHODOLOGY

### Description of the study area

Osun state was one of the states south western Nigeria. It was created from the old Oyo state; it has 3 ADP zones and thirty Local Government Areas. Osun state has a land area of approximately 8,500 square kilometers. It shares boundaries with Ekiti, Ondo, Kwara, Oyo and Ogun states respectively. The population of the state as at 1991 was put at 2.2 million. The language of the people of this state is predominantly Yoruba and their main occupation is agriculture. The state, like most states in the western part of Nigeria experience two main seasons; the dry and the wet seasons. For the purpose of this study we are concerned mainly with Ife central local government area located in the Ife/Ijesha ADP zone. The area is considered to be the major hub in the marketing of fresh Tomatoes in the state because of its cosmopolitan nature and the presence of the key players in the marketing chain. (i.e., the wholesale and retail marketers and the consumers).

### Sampling procedure

A two stage sampling technique was adopted in the study. At stage one, four major markets where majority of the marketers of fresh Tomatoes were located were purposively chosen. At the second stage, fifteen marketers were randomly selected from each of the major market. This resulted in a total number of sixty marketers being interviewed for this study. The markets selected were; Oja-Ife, Oja-Stadium, Oja-Titun and Olorunsogo markets, respectively.

### Data collection process

The data used in this study were primary and were obtained through the use of well structured questionnaires which were designed in such a way to provide the required information to fit into the objectives of the study. The respondents who were mainly marketers of fresh Tomatoes were interviewed, the questions were interpreted to them in their local dialect and their responses were promptly recorded by the researcher. Other methods also used in the data collection process include; the use of private interviews with the marketers, group interviews and direct observations were also used to obtain accurate data. The data was collected in the month of July, 2006.

### Analytical techniques

The three analytical techniques used in this study were descriptive, budgetary and regression analysis.

a) The descriptive analysis was used to describe all variables used in the study which includes variables such as age, sex, literacy level, government policy on weights and measures, adherence to policies, difficulties being faced by the marketers among others.

b) Budgetary analysis was used to determine the profit margins of the marketers of fresh tomatoes in the study area. To obtain this, the total cost is deducted from the total revenue. This was obtained from the data collected.

$$\text{Profit Margin} = \text{TR} - \text{TC} \quad (1)$$

Where:

TR = Total revenue

TC = Total cost, consisting of total fixed cost and total variable cost.

c) Regression analysis was used to analyze the determinants of profit margin. An Ordinary Least Square regression model was estimated. The explanatory variables included in the model are marketing cost, years of education, years of marketing experience, starting capital, transportation cost, distance where product were obtained, rent and the type of weight used in buying and selling.

The empirical regression analysis used is implicitly stated as:

$$\text{Profit Margin} = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7) \quad (2)$$

Where

$X_1$  = Years of formal education (years of schooling)

$X_2$  = Years of marketing experience (years)

$X_3$  = Initial Start-up Capital (naira)

$X_4$  = Cost incurred on marketing (naira)

$X_5$  = Distance between the source of procurement of fresh Tomatoes and the market (Km)

$X_6$  = Cost of renting per month (naira)

$X_7$  = Type of weight used in selling (Dummy variable; D = 0 if government approved measure is used. Otherwise, D = 1)

## RESULTS AND DISCUSSIONS

This section discusses the results of the data collected on the field. It contains the analysis of the socio-economic variables, the various marketing costs incurred by the marketers and the profit level of the marketers as well as the various variables that affected it. From Table-1, the indicator shows that the average marketer of cassava products is middle aged and also, most cassava market operators are literate; this is not out of place, since the study is in the southern part of Nigeria adjudged to have the highest level of literacy in Nigeria.

**Table-1.** Descriptive characteristics of fresh tomatoes marketers.

Characteristics	Dominant indicator	Mean value
Age	70.3% between 31 and 50 years	47 years
Gender	100% females	-
Education	81.2% had formal education	5 years
Marketing experience	56.4% between 11-20 years	19 years
Initial capital requirements	56.6% required between ₦7,000 and ₦15,000	₦12,175
Type of weight and measure used	80% use metallic/plastic plates	-
Type of fresh tomatoes sold	86.7% sold <i>Hausa</i> type	-
Policy awareness	100% aware of regulatory policies	-
Policy adherence	90% did not adhere	-

Source: Field survey 2006. Note: Official exchange rate is 1 US dollar = 120 naira at the time of the survey.

The average years of marketing experience among the respondent was 19 years which means that this trade is not just what anybody can delve into. You need to properly understand the market before you can come into it. Furthermore, from the same table, it could be concluded that the start-up capital for the business is a little bit high considering the poverty profile in Nigeria. Therefore, marketing of fresh Tomatoes, which is considered to be one of the income generating activities may not serve this purpose because of relatively high start- up capital. It is safe to assume that majority of the marketers in the study location use metallic/plastic plates, which is the most popular and convenient measure in the area, because of the purchasing capacity of the buyers who prefer to buy in small quantities. More importantly, the *Hausa* type of Tomatoes (i.e., the one transported from the North) was the most popular fresh Tomato traded by the marketers in the study area. Although, there are occasional sales of the local varieties, which the marketers claim are not widely acceptable to the consumers.

It was observed that there was just one policy regulating weights and measures in the study area. This policy clearly states the compulsory use of Kongo approved by the state government, by all marketers of staple foods, who use volume measures and every one of them was fully aware, which translates to a 100% policy awareness level. Furthermore, the results in Table-1, 90% of the respondents use other measurements other than the government approved *Kongo* suggesting that they did not adhere to the policy regulating weights and measures. The above shows the absence or weakness of the regulatory body charged with monitoring of the policy that only government approved volume measures should be used.

#### Analysis of the type and marketing costs of fresh tomatoes

It is of utmost importance to analyze the marketing cost of fresh Tomatoes because marketing cost is a key determinant in the profit margin that accrues to the marketer. The marketing cost was conceptualized as the difference between the amount paid by the consumers of final products and the total amount received by the producer (Adejobi, 2005). It is the cost incurred during the marketing process. The marketing cost incurred by the respondents in the study area consists of transportation cost, cost of labour, rent, membership of association fees, security cost and the profit margin.

Table-2 shows the distribution of the marketing cost incurred by the marketers within a period of one month. It could be seen that majority of the marketers did not incur up to ₦750.00 marketing cost. The average marketing cost in this area for fresh Tomatoes was ₦369.00/month, which is not particularly high. The average transportation cost was ₦95.00. The transportation cost was largely determined by the distance between the market and location where fresh Tomatoes are obtained from the wholesalers and not the farm in this case. However, there were some short distances which attract higher costs due to poor transportation infrastructures such as bad roads. From the Table, 35% of the respondents spent between ₦150.00 and ₦250.00 on rent and the majority (65%) did not rent stalls; they usually display their wares along the access roads in the market. The average rent within this study area is ₦125.00, which is quite moderate and happened to contribute the highest to the total marketing bill.

**Table-2.** Average monthly marketing costs of fresh tomatoes.

Variable cost	Dominant indicator	Mean value
Total marketing costs incurred/month	76.7% incurred < ₦750.00	₦369.00
Transportation cost/month	75% < ₦150.00	₦95.00
Labour cost /month	48.3% spent ₦50.00	₦36.50
Cost of rentage/month	35% spent between ₦150.00 and ₦250.00	₦125.00
Cost on security levy/month	70% paid ₦100.00	₦70.00
Association membership fees/month	85% paid ₦50.00	₦42.50
Local Government levy	100% paid ₦20.00 per day	₦20.00

Source: Field survey 2006. Note: Official exchange rate is 1 US dollar = 120 naira at the time of the survey.

### Determination of the profit margin of marketers

The profit margin was used as the dependent variable in the OLS regression estimation. Profit margins of the marketers were calculated on product specialty basis. The average profit margin was calculated as shown in Table-3. The average profit margin for the fresh Tomatoes retail marketers was discovered to ₦3798/month in the study area. However, most of the retailers of fresh tomatoes engage in sales of other vegetables such as pepper, onions, etc and sundry services such as operating grinding machines which tend to further increase the margin.

**Table-3.** Average monthly cost, revenue and gross margins from sales of fresh tomatoes.

Cost items	Mean values (₦)
Rent	125.00
Membership fees	42.50
Security costs	70.00
Transportation costs	95.00
Labour cost	36.50
Total cost	369.00
Mean revenue	4167.00
Gross margins	3798.00

Source: Field survey 2006. Note: Official exchange rate is 1 US dollar = 120 naira at the time of the survey.

### REGRESSION RESULTS

From the regression model stated earlier in chapter three, four functional forms were run out of which the Double-log was selected as the lead equation. The model has an adjusted  $R^2$  of 0.76, which indicates that 76% of variation in the profit margins of retail marketers of fresh Tomatoes was jointly explained by the explanatory variables included in the model.

**Table-4.** Regression result of the determinants of profit margin.

Independent variables	Coefficient	P ([T] > t)
Constant	-0.572	-0.0002
X <sub>1</sub>	2.776	0.0021***
X <sub>2</sub>	9.601	0.6663***
X <sub>3</sub>	1.055	0.2525
X <sub>4</sub>	-2.546	-0.1989**
X <sub>5</sub>	-1.383	-0.0004
X <sub>6</sub>	-1.105	0.0476
X <sub>7</sub>	2.239	0.0002**
Adjusted R <sup>2</sup>	0.70	
F-value	7.19	

Source: Data analysis, 2006. \*\*\* = Significant at 1%; \*\* = Significant at 5%

From Table-4, the model has an F-value 7.19 and was significant at 1% suggesting that the model is fit. Seven explanatory variables were included in the model, out of which four of the coefficients of the variables were significant. These include; level of education, marketing experience, marketing cost and type of measure used in selling.

### Level of education

The co-efficient of this variable was significant at 1% ( $p < 0.01$ ) and carries a positive sign; indicating that the higher the number of years of formal education is, the higher the profit margin of the marketers. This conforms to *a priori* expectations, because high level of literacy is needed to do well in the trade as it enhances the marketers' managerial ability and their level of intuitive reasoning.



### Marketing experience

The co-efficient of this variable was significant at 1% ( $p < 0.01$ ) and carries a positive sign; indicating that the longer the years of experience of the marketer in sales of fresh Tomatoes, the higher the profit margin of the marketer. This conforms to the *a priori* expectation in that longer experience enables the marketer to acquire indigenous methods of preservation of fresh tomatoes, thereby reducing the percentage loss due to damages and this in turn increases the profit level.

### Marketing cost

The co-efficient of this variable was significant at 5% ( $p < 0.05$ ) and carries a negative sign; indicating that the lower the marketing cost, the higher the profit margin of the marketer. This conforms to the *a priori* expectation in that if less marketing cost is incurred by the marketer, the more the profits that will accrue to the marketer for each sale made. A particularly high cost component here was the cost of stall rentage, showing that the cost of marketing infrastructure is high in the study area.

### Type of weight used in selling

The co-efficient of this variable was significant at 1% ( $p < 0.01$ ) and carries a positive sign; indicating that those marketers that use other measures different from the measures approved by the government tend to cheat the unsuspecting consumer, who, in addition to this, is also faced with the risk of being shortchanged if he doesn't have a good haggling ability. All these sharp practices tend to dubiously enhance the profit level of the marketer. This has a negative implication on food security of the consumer as his purchasing power is reduced by spending more and deriving less utility on the quantity of the product he buys.

### CONCLUSION AND RECOMMENDATIONS

This study examined the weights and measurements issues in the marketing of fresh Tomatoes in Ife Central Local Government Area of Osun state. It examined the activities of the marketers of fresh Tomatoes and how the product was being sold to the consumers. It looked at the State policy guiding weights and measurements and the effect it has on the profit margin of the marketers. The study concluded that level of education, marketing costs, years of marketing experience and the type of measurement used in selling to the consumers affected the profit margins of fresh Tomatoes marketers.

From the analysis of the weights and measurement issues conducted in the marketing of fresh Tomatoes in the study area, it was concluded that weights and measurement issues are important parts of the market institutions, which prompted the state government to come up with a policy directing all marketers to use state approved kongo as the measuring bowl during sale of staple foods which also affected fresh Tomatoes. However, it was discovered that the policy was not

adhered to because majority of the marketers in the area use other types of measures in the study area.

The marketing costs incurred by the marketers were discovered to be fairly low, an average of ₦369. Start-up capital too had an average of ₦12, 175, average gross margins for the fresh Tomatoes retail marketers per month was ₦3798. All this accounted for a large number of the marketers in the study area because the business has a very high rate of return. It can be thus concluded that cassava marketing is profitable with high returns in Ife Central Local Government area of Osun state.

Based on the findings of this study, the following recommendations were made to the marketers, producers, policy makers and consumers.

- a) Volume measures should be done away with and weights measures adopted with a fixed price for each unit of weight measure to reduce difficulties in buying and selling of cassava products.
- b) Food technologists should come up with ways on how fresh Tomatoes can be stored in sealed packs and sold in such packs with a fixed weight tagged on them. This is necessary, as it will facilitate buying and selling because a consumer can just go to the market and purchase in such packs without haggling.
- c) There is need for the government to come in and fix floor price for each unit of weight measurement like it is done in other parts of the world and adequate market information should be made readily available to eliminate illegal acts in the market place.
- d) Government should set up monitoring agencies to monitor closely the activities of the marketers and to see to it that policies are adequately enforced.
- e) There is need for the government to initiate policies that will ensure easy access to credit at subsidized rate so that start-up capital which is a bit on the high side would not be an impediment to the pro-poor fresh Tomato market.

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