

# MARKETING ANALYSIS OF FRESH TOMATOES IN ABEOKUTA NORTH LOCAL GOVERNMENT AREA OF OGUN STATE, NIGERIA

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**Abstract.** The marketing of fresh tomatoes is faced with many challenges mainly due to their high perishability and seasonality. This sometimes results in a lot of wastage and thus a decrease in the profits of the marketers. The study analyzed the marketing of fresh tomatoes in Abeokuta North Local Government Area of Ogun State with the aim of determining how profitable the venture was in the study area. A two-stage sampling technique was used to select 240 tomato marketers for the study. Primary data collected from the respondents with the use of well-structured questionnaires were used for the study. The objectives of the study were achieved using descriptive statistics, gross margin analysis, marketing margin analysis, and multiple regression analysis. The study revealed that the majority (76.7%) of the marketers were female. Most (70.9%) were within the age bracket of 31–50 years and 22.5% of them had no formal education. The cost and return analysis revealed that all of the marketing (100%) costs were variable and 90.4% was the cost of purchase. The total revenue was ₦181,845.35 (about 227 USD) and the marketing margin was 27.03%. The enterprise was profitable, with a gross margin of ₦55,102.45 (about 69 USD), and returns per naira invested were ₦1.43k. Gender, purchase price of tomatoes, transportation costs, marketing experience, and level of education were significant determinants of the quantity of the produce purchased by marketers for sale. The study concluded that fresh tomatoes marketing is a profitable venture in the study area. Therefore, the study suggested, among other things, that the government should construct new access roads and rehabilitate existing ones to make transportation of fresh tomatoes from the farms easier and cheaper for marketers.

**Keywords:** fresh tomato, marketing, gross margin analysis, marketing margins

## INTRODUCTION

Tomato is one of the major staple horticultural fruits that are consumed globally. Tomato is the edible berry (fruit) of the plant *Solanum lycopersicum*, commonly known as the tomato plant. The species originated in western South America, Mexico, and Central America. These edible berries are so commonly used across cuisines that it is hard to find a kitchen without them. Tomatoes are grown in a wide range of varieties in various regions across the world. Some of the most popular variants include plum tomatoes, toberries, cherry tomatoes, beefsteak tomatoes, and grape tomatoes. They are also grown in numerous colors, ranging from red, yellow, black, and pink to purple, white, brown, and orange. However, red is the most common variety worldwide. It can be consumed in various forms—from eating solely raw or as part of the ingredients for vegetable salad to blending with pepper and onions to make stew. Tomato is also processed to make tomato puree, paste, and ketchup. According to Haruna et al. (2012), the seeds which are extracted from the pulp and its residues contain 24% oil, which is used for salad dressing and in the manufacturing of margarine and soap. Consumption of

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tomato has numerous important health benefits which are attributed to the lycopene it contains, which is an antioxidant that enhances the human body's immune system. Lycopene also improves vision, skin, and hair health. It also reduces inflammation and the risk of heart disease, cancer, and diabetes, among others (Aina et al., 2021).

In Nigeria, tomato is largely produced in the northern part, though it thrives in many other parts of the country. The scale of production is so large in the northern part that it is usually transported down south because of the high consumption rate among the southerners. Tomato is one of the common horticultural fruits that are sold all the time in the markets, although it is seasonal, and this determines whether it is surplus per time or not. It is often sold alongside pepper and onions. Likewise, tomatoes are sold by marketers that sell vegetables like cucumber, cabbage, lettuce, and so on. The fact that tomato constitutes a major part of staples in most Nigerian homes makes its marketing very crucial. Quite a large number of people, both men and women, engage in the marketing of fresh tomatoes and it constitutes a major source of livelihood for many households.

Tomatoes are highly seasonal and perishable. These factors constitute a major challenge to its marketing. There is also the problem of storage. There is a vast majority of tomato producers all over the country, resulting in a glut of produce, especially during its season. This comes with the challenge of proper preservation and storage. Tomatoes are often sold at very cheap prices during the on-season, which reduces the profits of both producers and marketers. This is primarily owing to the fact that tomatoes are highly perishable and has to be sold off almost immediately after harvest for consumption. As suggested by Afolabi (2019), a loss of more than 50 percent is often recorded by producers of fresh tomatoes and this is largely due to bad access to a road network, poor transportation and storage facilities, ignorance of modern processing methods and technology, and poor post-harvest activities such as handling and sorting.

According to Akura et al. (2018) and Olugbire et al. (2020), marketing, though considered very important, has been a neglected area of agricultural development plans in Nigeria over the years. This has obviously led to an increase in the cost burden which marketers of agricultural produce bear and it has consistently impacted market performance negatively.

The demand for tomatoes is high and universal and thus, it is important to look further into its marketing and marketability. Tomato production has resulted in the creation of various employment opportunities for the country's teeming population (Abolusoro et al., 2014 and Ibrahim et al., 2020). According to Olugbire et al. (2020), many Nigerians earn their living as producers, transporters, marketers, middlemen, and professional packing men. Tomato is equally a source of foreign exchange earnings for the country, as the processed form is exported to other countries (Salau and Salman, 2017 and Olugbire et al., 2020). The importance of fresh tomatoes cannot be overemphasized, hence the need to look further into the profitability of its marketing. The study sought to answer the following research questions with respect to the study area: What are the socio-economic characteristics of tomato marketers? What is the profitability of fresh tomatoes marketing? What is the marketing margin on fresh tomato? What are the factors that affect the quantity of fresh tomatoes purchased by the marketers for sale?

The productivity of fresh tomatoes is largely influenced by the scale and success of its marketing. The study aimed to reveal how profitable fresh tomato marketing is in the study area. This study will no doubt add to the existing literature on the marketing of fresh tomatoes as the outcomes will aid the formulation of policy recommendations that seeks to stimulate farmers' interest in larger scale production of tomatoes and educate them on more efficient marketing of their produce.

### Research hypothesis

Stated in the null form, the following hypothesis was tested:

- Fresh tomato marketing is not a profitable venture in Abeokuta North Local Government of Ogun State.

## MATERIALS AND METHODS

### Study area

The study was conducted in Abeokuta North Local Government Area of Ogun state. The LGA has a projected population of about 200,000 people (NPC, 2006) with more than 75% of its people living in the urban areas, although more than 90% of the area is rural. The people are predominantly farmers, most of whom engage in the cultivation of arable crops while some engage in the rearing of livestock and fishing. The major food-crops include cassava, cocoyam, plantain maize, and

vegetable, while palm products and cocoa form the major cash crops. The people of the area engage in quarry business, artisan works, and handicrafts such as tie and dye making (*Adire*) and pottery.

### Sample and sample size

The study employed purposive and random sampling techniques to select markets and respondents in a two-stage sampling technique. In the first stage, four markets were purposively selected, being the major markets within the study area. These are the Olomore pepper market, Ita-Elega Market, Lafenwa Market, and Iberekodo Market. In the second stage, sixty respondents (tomato marketers) were randomly selected from each market, giving a total of two hundred and forty (240) marketers. The study made use of primary data which were collected through well-structured questionnaires administered on the tomato marketers. Data were collected on the socio-economic characteristics of the marketers, price, costs, returns, sales, and problems associated with tomato marketing.

### Analytical techniques

The study made use of descriptive statistics, gross margin analysis, marketing margin, and multiple regression analysis to analyze the objectives of the study.

### Descriptive statistics

Descriptive statistics involving the use of measures of central tendency such as frequency, means, and percentages were used to describe the socioeconomic characteristics of tomato marketers and problems associated with the marketing.

#### Gross margin analysis

Gross margin analysis was used to determine the profitability level of tomato marketing. The Gross Margin model was specified from the point of view of estimation of total expenses (costs), as well as various returns or revenue within a marketing period (Aremu, 2011 and Olugbire et al., 2020).

$$\text{Gross Margin (GM)} = \text{GR} - \text{TVC} \quad (1)$$

Where, GR = Gross Revenue

$$\text{TVC} = \text{Total Variable Cost} \quad (2)$$

$$\text{Gross Revenue (GR)} = Q \cdot P_y \quad (3)$$

Where, Q = Quantities of tomatoes sold (Kg);

$P_y$  = Unit price of tomatoes (₦/kg).

### Marketing margin analysis

Marketing margin is a measure of market performance. It is the difference between the price paid by the consumer and that received by the producers. It can be expressed in cash or in percentage of the retail cost (Adegeye and Dittoh, 1982 and Abbot and Markeham, 1986). The formula adopted for this study is that specified by Olukosi et al. (2005) and as used by Ali et al. (2008); Nwaru et al. (2011); Obayelu et al. (2014) and Aminu et al. (2019). It is as stated below.

$$\text{Marketing margin} = \frac{\text{Selling price} - \text{Purchase price}}{\text{Selling price}} \times 100 \quad (4)$$

### Ordinary least square (OLS) regression model

OLS was used to determine factors affecting the quantity of tomatoes purchased by the marketers for sale. The model is specified as:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + U$$

where:

$Y$  – quantity of tomatoes purchased for sale (kg)

$X_1$  – purchase price of tomatoes (N/kg)

$X_2$  – transportation costs (N)

$X_3$  – marketing experience (years)

$X_4$  – educational level of marketers (years)

$b_0 \dots b_4$  – coefficients to be estimated

$X_1 \dots X_4$  – independent variables

$U$  – disturbance term.

## RESULTS AND DISCUSSION

The socio-economic characteristics of respondents are presented in Table 1. As shown in the table, about 85% of the marketers were not more than 50 years old. This implies that the majority of them were still in their active and productive age. The majority (76.7%) of the marketers were female and this means that it is a female dominated enterprise. In all the four markets where the marketers were interviewed, the male sellers were less than a quarter whereas over three-quarter of them were women.

This is in consonance with the findings of Obayelu et al. (2014) and Olugbire et al. (2020); however, it disagrees with those of Haruna et al. (2012); Ibrahim et al. (2020); Abdurrahman et al. (2022), and Aina et al. (2021). This reveals the gender disparity influenced by cultural differences in tomato marketers between the

**Table 1.** Socio-economic characteristics of respondents

Variables	Frequency	Percentage
Age (in yrs)		
≤ 30	36	15.0
31–40	88	36.7
41–50	82	34.2
51–60	30	12.5
> 60	4	1.6
Sex		
Male	56	23.3
Female	184	76.7
Marital status		
Single	10	4.2
Married	204	85.0
Divorced	26	10.8
Household size		
1–4	80	33.3
5–8	130	54.2
> 8	30	2.5
Educational level		
No formal	34	14.2
Primary	124	51.6
Secondary	78	32.5
Tertiary	4	1.7
Marketing experience		
≤ 10	114	37.5
11–20	68	28.3
21–30	42	22.5
> 30	16	11.7
Source of capital		
Personal savings	70	11.8
Bank loan	8	1.4
Cooperative loan	18	61.1
Family	144	25.7

Source: field survey, 2021.

north and south parts of Nigeria. Many (85%) of the marketers were married with an average household size of 6 members. Only a few (14.2%) of them had no formal education and the remaining 75.6% had one form

of formal education or the other. This indicates a high literacy level among the marketers, implying that most of the marketers are able to solve their marketing challenges and employ marketing methods that can yield a profit increase. The table further revealed that 62.5% of them had more than 10 years of marketing experience meaning that many of them were well experienced in the marketing of fresh tomatoes. With respect to sources of capital for their business, the table showed that more than half (61.1%) of the marketers got their capital from the cooperative societies which they belong to, while just 1.4% of them got loans from the bank. This further substantiates the importance of cooperative membership in making credit readily available to rural people, as opposed to the formal lending organizations who are less willing to render financial assistance to them.

The analysis of the cost and return of fresh tomato marketing is presented in Table 2. As seen in the table, the marketers incurred only variable costs and no fixed cost. The fixed costs have been set by the authorities of Local Government Area.

**Table 2.** Cost and return analysis of fresh tomato marketing (₦/kg)

Cost item	Mean (N)	Percentage of total cost (%)
Variable cost		
Cost of purchase	114,560.30	90.4
Transportation	4,661.80	3.7
Levies	570.50	0.4
Labour	1500.33	1.2
Rent of stall	2,800.00	2.2
Marketing materials	2,650	2.1
Total Variable Cost (TVC)	126,742.93	
Total Cost (TC)	126,742.93	
Returns		
Gross Revenue (GR)	181,845.38	
Return/Naira Invested (GR/TC)	1.43	
Gross margin	55,102.45	

Note: Marketing materials include baskets, bowls, plates and trays. Source: field survey, 2021.

The results of the analysis revealed that the major costs incurred by the marketers were the cost of purchase (90.4%), transportation cost (3.7%), and renting of stalls (2.6%). The average basket of tomatoes was 30kg while the average purchase and selling price per basket was ₦9,150.50 (about 11 USD) and ₦12,650 (about 16 USD), respectively. The average quantity of fresh tomatoes sold per marketer per month was 14.375 baskets. This gives a total revenue of ₦181,845.35 and a gross margin of ₦55,102.45. The return per naira invested was ₦1.43k indicating that the enterprise is profitable. The result of the costs and returns of fresh tomato marketing in the study area indicates that the enterprise was profitable. Marketing of tomato is usually a worthwhile venture because it is generally a major part of household diets.

The result of analysis of the margin on fresh tomato marketing is presented in Table 3. The market margin was 27.03%, which implies that the tomato marketers realize a margin of 27.03% of the producer price.

**Table 3.** Marketing margin of fresh tomato marketing

Price	Amount (N/kg)
Purchase	190.35
Selling	260.85
Marketing margin (%)	27.03

Source: field survey, 2021.

This is an acceptable marketing margin with reference to Scarborough and Kydd (1992) and Obayelu et al. (2014), who state that 5% and 10% marketing margins are acceptable for storable and perishable goods, respectively. Tomato marketing is thus profitable, and this is in consonance with the findings of Umar and Yaro (2017), Aminu et al. (2019), Olugbire et al. (2020), and Abdurrahman et al. (2022). The null hypothesis that tomato marketing is not a profitable venture in the study area is therefore rejected.

The factors that affect the quantity of fresh tomatoes purchased for sale by the marketers are as shown in Table 4.

The linear functional form was selected as the lead equation based on the value of the R-Squared, F-ratio, and the number and signs of significant variables. The

**Table 4.** Linear regression result of the determinants of quantity of fresh tomatoes purchased for sale

Variables	Coefficient	t-ratio
Gender	-0.147* (0.332)	-2.761
Education	0.144** (0.096)	3.212
Purchase price	-0.003** (0.000)	2.010
Transportation cost	-0.001*** (0.000)	2.129
Marketing experience	0.122* (0.051)	1.231
Constant	2.601* (1.282)	1.711
R <sup>2</sup>	0.761	
F	33.358***	11.123

\*\*\*, \*\*, \* indicates significant at 1%, 5% and 10% respectively. Standard errors are in parenthesis.

Source: field survey, 2021.

model shows that the independent variables accounted for 76 percent of the variation in the quantity of fresh tomatoes the marketers purchase for sale. Five variables were found to significantly determine the quantity of tomatoes purchased for sale by the marketers in the study area. The purchase price of tomatoes negatively affected the quantity purchased for sale at 5% level of significance. A rise in the purchase price reduces the quantity that will be demanded by the marketers for sale and vice versa. When the purchase price is high, the marketers are compelled to buy less than what they would have wished to buy, and this will invariably lead to an increase in the price at which they will sell the products to consumers, as the demand will be higher than supply. This is in line with the *a priori* expectation and is in consonance with the findings of Obayelu et al. (2014). The cost of transportation also had a significant and negative effect on the quantity of fresh tomatoes purchased. The marketers are forced to reduce the quantity of tomatoes they can purchase due to a high transportation cost. The price at which they will sell to consumers will naturally increase as the forces of demand and supply play out. Marketing experience was significant at 10% and positively related to the quantity of fresh tomatoes purchased

for sale. This implies that the more experience acquired, the higher the quantity of tomatoes will be purchased for sale by the marketers. Those with many years of experience have mastered the trade and are able to manage sales of large quantities of fresh tomatoes. This corroborates the findings of Ali et al. (2008), Emam (2011), Obayelu et al. (2014), and Aina et al. (2021). Years of education also positively determined the quantity of tomatoes purchased at 5% level of significance, and this means that more educated marketers are more likely to purchase larger quantities of fresh tomatoes for sale. With higher levels of education comes many acquired skills and innovations in selling tomatoes. The gender variable was significant at 1% and negatively influenced the quantities of tomatoes purchased for sale. Male marketers tended to purchase lower quantities for sale compared to their female counterparts. Women have notably proven to be generally better in selling fruits and vegetables than men, especially in the southwestern part of Nigeria where the study area is located. This is contrary to the findings of Ibrahim et al. (2020) who carried out their study in the northern part of the country where women are culturally restrained from selling in the open markets.

The identified constraints on fresh tomato marketing in the study area are presented in Table 5.

**Table 5.** Distribution of the constraints associated with fresh tomato marketing

Constraints	Percentage (%)
Lack of formal credit	34
High transportation cost	27
Inadequate storage facilities	18
Inadequate processing industries	11
Seasonality	6
Lack of market facilities	4

Source: field survey, 2021.

The table shows that most of the marketers (34%) were faced with the problem of lack of access to formal credit, which restricts them from expanding the scale of their enterprise. Many of them resort to obtaining financial assistance from local money lenders who

charge high interest rates. Other constraints include high transportation costs (27%), inadequate storage facilities (18%), inadequate processing industries (11%), seasonality (6%), and lack of market facilities (4%). A large quantity of fresh tomatoes is wasted due to the problem of inadequate storage facilities to preserve them from perishing. There is also a problem of inadequate processing industries in which they could be turned into tomato pastes and sold. In addition, seasonality poses a major challenge to marketers of fresh tomatoes. They are often forced to engage in other enterprises during the off-season of tomatoes.

## CONCLUSION

The study analyzed the marketing of fresh tomatoes in Abeokuta North LGA of Ogun State.

The empirical findings revealed that fresh tomato marketing is a profitable venture in the study area. Virtually all households consume tomatoes; thus, demand for them is always high all through the year. Gender, purchase price of tomatoes, transportation costs, marketing experience, and level of education were significant determinants of the quantity of fresh tomatoes purchased by the marketers. The major constraints that tomato marketers face include lack of access to formal credit, high cost of transportation, inadequate storage facilities, inadequate processing industries, seasonality, and lack of market facilities. The study suggested that the government should construct new access roads and rehabilitate existing ones to make transportation of fresh tomatoes from the farms easier and cheaper for marketers. This will invariably reduce the cost of transportation and increase profits. More men should be encouraged to go into the marketing of fresh tomatoes in the study area to generally improve the living standards of households. The marketers should also be encouraged to acquire at least the basic formal education, as this will contribute to efficient marketing. The study further suggested that formal financial institutions should make credit facilities more accessible to marketers that request loans from them. Marketers should also join cooperative societies close to them to improve access to credit and aid the expansion of their business. The government and the private sector should endeavor to set up tomato processing plants and storage facilities to eliminate the challenge of wastage and seasonality. Both government and non-governmental organizations

should also ensure that there are adequate marketing facilities in the markets.

In future scientific research, the team intends to carry out a comparative analysis of tomato marketing in two different geopolitical zones in Nigeria.

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