



Original Research Article

Assessment of the performance of tomato marketing in Yalmatu-Deba Local Government Area of Gombe State, Nigeria

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The study examines the performance of tomato marketing in Yamaltu Deba Local Government Area of Gombe State. The socio-economic characteristics, cost and returns, marketing margin and constraints associated with tomato marketing were examined. Data were collected from 80 respondents by means of structured questionnaire. Data collected were analyzed using descriptive statistics, gross margin and Gini-coefficient analysis. The results revealed that majority (93.75%) were active, male (78.75%), married (92.5%), had more than 5 years marketing experience (86.25%) and source their capital through personal savings (91.25%). The gross margin analysis showed that tomato marketers incurred a total variable cost of ₦7,213,815 and earned total revenue of ₦8,187,640 per annum with gross margin of ₦973,825 and Benefits Cost Ratio (BCR) of 1.13. This is an indication that tomato marketing was a profitable venture in the study area and for every naira invested there was a profit of 13 kobo. Gini-coefficient obtained in the study indicates high level of inequality of sales and high concentration of tomato market. The major constraints to tomato marketing were transportation, storage, spoilage, finance, low demand output and absence of companies. The study recommends, construction of good road to reduce cost of transport and spoilage and introduction of extension education programmes for the marketers, to improve their technical knowledge and skills to make the marketing system become responsive to consumers demand and guide against spoilage.

Keywords: Assessment, performance, tomato, marketing, Gombe, Nigeria.

INTRODUCTION

Tomato (*Lycopersicon esculentus*) is from the family of *solanaceae* and is originated from South Africa. It is cultivated for its fruit which when ripe and ready for harvest, the colour will be golden yellow or blood red depending on the variety. It is a fleshy berry with pericarp. The shape is almost spirally oval, and elongated to pear shape. Tomato is one of the most widely cultivated vegetable in the tropics (Afolabi, 2019). It is a staple fruit vegetable in the World. It is widely used vegetable and can be consumed both in raw as salad or processed into paste

or purees which are used for cooking in soups, stew and producing fruit drinks. Other uses of tomato are powder, preservatives canning, pizza, juice and sun drying. Tomato juice has become an exceedingly popular appetizer and beverage. Tomato is a fresh fruit and very important source of vitamins and minerals that are very essential for healthy human diet. The use of tomato is about 19.8 percent of the average daily consumption of vegetable in Nigeria (Taiwo, 2002). The consumption of tomato can cut down the risk of developing prostate cancer, stomach cancer and sore

mouth and help older people stay active and live longer.

Tomato is one of the most important horticultural grown for its edible fruit in virtually every home in Nigeria. Its production in North-Eastern Nigeria is mainly during the hot rainy season. However, post-harvest storage of its fruit is the major cause of fluctuation in seasonal availability and deterioration in quality. Tomato fruits are highly perishable and thus have an inherent short shelf life. The rapid quality loss at relatively short period of 4 – 7 days calls for an efficient means of storing the fruits to reduce wastage and improve intake (Thompson et al, 2018). Several factors are militating against efficient marketing of tomato such as its perishability, seasonality, quality, price and location of the products (Kohls and Uhl, 2002). Food losses after harvesting may include losses from technological origin such as deterioration by biological or microbial agents and mechanical damage. Losses due to technological origin include unfavourable climate, cultural practices, poor storage condition and inadequate handling during transportation, all of which lead to accelerated product decay. Deterioration by biological or microbial agents refers to losses caused by insects, bacterial, moulds, yeast, virus, rodents and other animals (Ahmadu and Emokaro, 2011). Damage could occur as a result of careless handling of packed tomato during loading and unloading, vibration (shaking) of the vehicle on road due to potholes and poor storage, with packages often squeezed into the vehicle by transporters. Such losses can be significant in the tomato marketing channel. The arrival of fresh supplies of tomato in the market is often marked by discarding of the old stock for fresh ones, or at best the old stock is sold at a “give away prices”.

The performance of food and vegetable marketing has shown very low gross margin due to bulkiness, perishability nature and high risk and uncertainty in food marketing. In agreement with this view, Afolabi (2019) noted that the state of Nigeria food losses during marketing shows plantain and banana, 20 – 80%, yam, 20 – 30%, maize, 25 – 30%, pineapple, 70 % and pawpaw, 40 – 60%. He summarized that in all; about 50% of harvested farm produce is lost before reaching the final consumer's table. Tomato cannot be an exception being an agricultural commodity. The broad objective of this study is to assess the performance of tomato marketing in the study area and the specific objective were to identify socio-economic characteristics of respondents in the study area, evaluate costs and returns to tomato marketing in the study area, determine marketing margin of tomato marketing in the study area and to examine the constraints to tomato marketing.

METHODOLOGY

The research was conducted in Yalmatu-Deba Local Government Area of Gombe State, Nigeria. Its headquarters is in the town of Deba. It is bounded to the North by Kwami LGA, to the East by Gombe LGA, to the South by Akko LGA,

and to the West by Bayo LGA of Borno State. It has an area of 1,981km² and a population of 255,248 (NPC, 2006). The Southern part of Dadin Kowa lies within the area. It is situated between longitude 10°15' and latitude 11°00' - 11°45' of the equator. The study area falls within the dry savannah ecological zone of Nigeria and experiences dry season from November to April while wet season begins from late April to October. This is characterized by the North Easterly wind blowing across the country from Sahara desert known as Harmatan wind. The temperature ranges from 13.6°C in January and 9.0°C to 28.5°C in August. The annual rainfall in the area is between 800mm and 900mm with rainfall duration from 4 – 5 months (GSADP, 2021).

The commonly practice religion is Islamic, although some settlement had sizable number of Christians. The area is dominated by families which are polygamous in nature. The area is mainly an agrarian area. The major crops grown include food crops like sorghum, maize, cowpea, rice, cassava, sweet potatoes and wide varieties of vegetables such as tomato, pepper, onion etc. Other major crops produced in the area include groundnuts and cotton. The people are also engaged in other trades such as hunting, fishing, cattle and other livestock rearing. The ethnic group find in the area include Terawa, Bolawa, Hausa Fulani communities (GSADP, 2021).

Sampling Technique

A two stage sampling technique was used in selecting the respondents. The first was a purposive sampling of four markets in the study area (Dadinkowa market, Kuri market, Maikaho Market and Kwadon market). The second stage was random selection of twenty (20) tomato marketers from each of the four markets, given a total of eighty (80) respondents for the study.

Method of Data Collection

The data used for this study were collected by means of structured questionnaires and personal interview. A total of eighty copies of questionnaire were collated and used for the study.

Data Analysis

The data collected were analyzed using descriptive statistical techniques which consist of tables, frequencies and percentages. Gross margin analysis was also used to determine the profitability of the business, Gini-coefficient calculated, was used to examine the market concentration for tomato in the study area and percentage was used to examine the constraints to tomato marketing in the study area.

The Cost and Return Analysis

TR = Price per basket of tomato x number of basket sold

Table 1. Socio-economic Characteristics of Respondents

| Variable | Frequency | Percentage (%) |
|------------------------------------|-----------|----------------|
| Age (year) | | |
| 16 – 25 | 8 | 10 |
| 26 – 35 | 22 | 27.5 |
| 36 – 45 | 40 | 50 |
| 46 – 55 | 5 | 6.25 |
| 56 – 65 | 2 | 2.5 |
| > 65 | 3 | 3.75 |
| Gender | | |
| Male | 63 | 78.75 |
| Female | 17 | 21.25 |
| Marital Status | | |
| Single | 2 | 2.5 |
| Married | 74 | 92.5 |
| Widows | 4 | 5 |
| Household Size | | |
| 0 – 5 | 0 – 5 | 38.75 |
| 6 – 10 | 6 – 10 | 33.75 |
| > 10 | > 10 | 27.5 |
| Education Level | | |
| Primary Education | 21 | 26.25 |
| Secondary Education | 10 | 12.5 |
| Adult and Literacy | 12 | 15 |
| Never Attended | 37 | 46.25 |
| Marketing Experience (year) | | |
| 0 – 5 | 11 | 13.75 |
| 6 – 10 | 15 | 18.75 |
| > 10 | 54 | 67.5 |
| Source of Capital | | |
| Personal Savings | 73 | 91.25 |
| Friends and Relatives | 3 | 3.75 |
| Cooperative Society | 4 | 5 |

$$GM = TR - TVC$$

Where:

GM = Gross Margin

TVC = Total Variable Cost,

TR = Total Revenue and

$$\text{Benefit Cost Ratio (BCR)} = \frac{\text{Total Revenue}}{\text{Total Cost}}$$

Gini Coefficient

$$GC = 1 - (N.Y.X)$$

Where:

Y = the percentage of tomato sellers

X = the cumulative percentage of their sales.

RESULTS AND DISCUSSION

Table 1 revealed that the majority of the respondents (93.75%) were within the age range of 16 – 55 years and 6.25% were within the age range of 26 – 35years. This shows that majority of the respondents are in their active age, which in turn help in the vigor's associated with the business. The field survey data also revealed that 78.75% were male and 21.25% female. The dominance of male could be attributed to the fact that major agricultural

activities are done by men while most of the women are full house wives who doesn't farm except doing post harvest work. The study revealed that majority (92.5%) were married and has family responsibility. The study equally revealed that majority (61.25%) of the respondents has more than five (5) household. This implies that family labour will be the source of labour. The study revealed that adult and non-formal educations constitute 61.25%, while primary and secondary education was 38.75%. Majority of the respondents had never attended school which will affect the rate of adoption and decision making will be based on experience. Majority (86.25%) of the respondents had more than five (5) years marketing experience which will help in profit making. Emma, (2019), asserted that marketing experience is important in determining the level of profitability obtained by a marketer, the more years of marketing experience, the more knowledge and profits the marketers tends to get, as he will use his understanding of the marketing system, market condition, market trends and price. The results also indicate that majority (91.25%) get their capital source through personal savings while 5% source their capital through cooperative society. These affect the volume of money in the business and made them to work on a small scale.

The gross margin is one of the short run measures of the

Table 2. Cost and Returns of Respondents per month

| Items | Amount | % of TVC |
|---------------------------|-----------|----------|
| Cost of Purchase | 6,326,100 | 87.69 |
| Transportation Cost | 602,420 | 8.35 |
| Labour Cost | 222,815 | 3.09 |
| Storage Cost | 38,120 | 0.53 |
| Tax Levy | 24,360 | 0.34 |
| Total Variable Cost (TVC) | 7,213,815 | 100 |
| Total Revenue (TR) | 8,187,640 | |
| Gross Margin (GM) | 973,825 | |
| Gross Ratio | 0.88 | |
| Benefit Cost Ratio (BCR) | 1.13 | |

Table 3. Estimated Gini coefficient of tomato marketing

| Range Income | Frequency | % of seller(x) | Total Sales | % of T/t Sales (y) | xy |
|-------------------|-----------|----------------|------------------|--------------------|----------------|
| ≤ 20,000 | 3 | 3.75 | 54,636 | 0.67 | 0.00025 |
| 20,001 – 40,000 | 10 | 12.5 | 370,090 | 4.52 | 0.00565 |
| 40,001 – 60,000 | 8 | 10 | 446,240 | 5.45 | 0.00545 |
| 60,001 – 80,000 | 5 | 6.25 | 364,555 | 4.45 | 0.00278 |
| 80,001 – 100,000 | 6 | 7.5 | 567,648 | 6.93 | 0.00520 |
| 100,001 – 120,000 | 29 | 36.25 | 3,394,450 | 41.46 | 0.15029 |
| 120,001 – 140,000 | 15 | 18.75 | 2,050,230 | 25.04 | 0.04695 |
| > 140,000 | 4 | 5 | 939,761 | 11.48 | 0.00574 |
| Total | 80 | 100 | 8,187,640 | 100 | 0.22231 |

Table 4. Constraints of Tomato Marketing in the Study Area

| Constraint | Frequency | Percentage | Rank |
|---------------------------|-----------|------------|------|
| Transportation Challenges | 76 | 95 | 1st |
| Storage Problems | 73 | 91.25 | 2nd |
| Spoilage | 72 | 90 | 3rd |
| Financial Problems | 65 | 81.25 | 4th |
| Low Demand Output | 62 | 77.5 | 5th |
| Absence of Companies | 21 | 26.25 | 6th |

profit level in a business. It considers the return that accrues to investment within the time frame when some production inputs remain fixed or unchanged. Table 2 revealed the cost and returns of fresh tomatoes. It shows that no fixed costs incurred. The variable cost constitutes 100% of the total costs of marketing fresh tomatoes in the study area. The results further indicated that the cost of purchase (87.69%), transportation cost (8.35%), labour cost (3.09%), storage cost (0.53%) and tax levy (0.34%) were the major costs incurred in tomato marketing. The cost price of a basket of tomato was ₦3,300 and selling price was ₦4,280. A total of 1913 baskets of tomatoes were sold. This gave total revenue of ₦8,187,640 and gross margin of ₦973,825 per month. The gross ratio was 0.88, which is less than one (1) is an indication that the enterprise is profitable. The benefit cost ratio (BCR) was 1.13. This is an indication that for every naira invested there is a gain of 13 kobo. Tomato marketing in the study area was profitable.

$$\text{Gini Coefficient} = 1 - \Sigma xy$$

$$= 1 - 0.22231$$

$$= 0.77769$$

The results as presented in Table 3, shows that the estimated Gini-coefficient for tomato marketing was 0.77769. This implies that there is high level of inequality in the sales of the respondents and consequently high level of concentration of tomato market. This is a reflection of inefficiency in the market structure for tomato in the study area. The result was in line with Akintade (2020) in his finding that the values of Gini-coefficient greater than 0.35 is high indicating inequality distribution of sales.

The analysis revealed in Table 4, shows that transportation problem ranked first of the constraints considered. One possible explanation for this is that marketers travel from point of purchase to the point of sale. Many marketers regretted that most of the roads to their stalls were not motorable, resulting in high cost of transportation of their commodity. The distance to the point of sales could affect the quality and cost of tomato which consequently increase the marketing cost and

thereby reducing the profit margin. Next to transportation was storage problem, which can affect the quality if not properly stored and in-turn affect the sale price. Third in the ranking was spoilage problem due to perishability nature of tomato. The respondents lamented over the level of spoilage they encountered in fresh tomato marketing. They complained that they had no perfect means of preserving fresh tomato to have good price for the commodity while maintaining the quality of tomato at the same time. Another constraint faced by the respondent was financial problem. Most of the respondents complained about financial problem to build or hire market stalls and expand their business. This is also supported by the fact that most tomato marketers finance their business through personal savings. Given the low income of the marketers only little can be expected from the savings. Low demand output and absence of companies were the other constraint encountered by the respondents.

Conclusion and Recommendations

The study examines the performance of tomato marketing in the study area and concludes that; majorities of the respondents were active, male, married, experienced and source their capital through personal savings. Tomato marketing was a profitable venture in the study area, for every naira invested there was a profit of 13 kobo with a high level of inequality and concentration in tomato market. The major constraints were transportation, storage, spoilage, finance, low demand output and absence of companies. The following recommendations were made based on the findings:

* Ministry of works should provide better road in place to reduce cost of transport and spoilage.

* Ministry of agriculture should encourage tomato marketers to form cooperative society in order to meet their common economic, social and cultural needs and aspiration through a jointly owned and democratically controlled enterprise.

* There should be training for tomato marketers by the ministry of agriculture on how to access credit from financial institutions and link them to credit facilities that are available from formal sources like Non-Governmental Organizations (NGOs), government programmes, Micro-finance Banks and Commercial Banks.

*The introduction of extension education programmes by the ministry of agriculture for the marketers will also improve their technical knowledge and skills to make the marketing system become responsive to consumers demand and guide against spoilage.

Conflict of interests

The authors declare that they have no conflicting interests.

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