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PROFIT ANALYSIS AND MARKET STRUCTURE OF FRESH TOMATO MARKETING IN ANAMBRA STATE, NIGERIA

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ABSTRACT: *The study examined profit analysis and market structure of fresh tomato marketing in Anambra State, Nigeria. Specifically, it described the market structure, market conduct, cost and returns and constraints to fresh tomato marketing in the study area. Multistage sampling procedure was used to select 180 marketers (45 wholesalers and 135 retailers). Data were collected from primary source using structured questionnaire. Collected data were analyzed by means of descriptive analysis, Enterprise budgeting, Sherpherd-Futrel, Gini coefficient and Relative Importance Index (RII). From the result, market structure using Gini coefficient gave an index of 0.7565 and 0.7139 for wholesalers and retailers respectively. These values indicate a high level of income inequality in terms of sales margin distribution among marketers and a concentration of sales in the hands of a few individuals where certain marketers may have the ability to influence product prices. The result of marketing efficiency gave coefficients of 63% and 78% for wholesalers and retailers respectively. The level of inefficiency was higher (78.8%) among the retailers than the wholesalers (63%) implying that the wholesalers were more efficient in the marketing of fresh tomato than the retailers. The result of profitability of fresh tomato marketing showed that cost of stock was the important cost of marketing having represented 89.47% and 91.56% of the total cost of marketing for the wholesalers and retailers respectively. Net marketing income was ₦77,560,714.30 for wholesalers and ₦12,409,249.00 for retailers, proving that fresh tomato marketing is a profitable enterprise. The study recommended that government of all tiers should improve the road network in order to facilitate the movement of agricultural produce to diverse locations and fluctuation of prices of fresh tomato should be addressed by establishing a market board that regulates food prices.*

KEYWORDS: *Profit, market structure, conduct, and fresh tomato.*

Introduction

Tomato is the one of the widely grown vegetables in the world, accounting for more than one fifth of the world production (Abdurrahman *et al.*, 2022). According to Nkamigbo *et al*. (2019), tomato (*Lycopersicon esculenta*) is a major vegetable crop that achieve tremendous popularity over the century and aside from being tasty, it promotes healthy nutritional balance as it an excellent source of lycopene (a very powerful antioxidant) that help to fight many forms of cancer development. It is one of the most important crops both in scale of production and level of consumption. It has high economic value and high nutritional potentials in our diet. Nwigwe *et al.* (2020) stated that tomatoes are very important in the daily meal preparation since it can be eaten raw or cooked. Large quantities are used to produce soups, juices, sauces, ketchups, purees and paste. It can be used in canning industries. Katanga *et al.* (2018) viewed tomato as cultivated for its fleshy fruits, known as a protective food because of its special nutritive value and its wide spread production. It is one of the richest sources of nutrients, dietary fibers, antioxidant like lycopene and beta-carotene, which are the compounds that protect cells from cancer. Odemero and Gbigbi (2019) opined that tomato is important in the daily meal of households in most parts of the world. It is an essential ingredient in soups or sometimes consumed raw as juice and sauces, and an important raw material in the canning industries. The unripe tomato is used for pickles. Odemero and Gbigbi (2019) further stated that tomato marketing in domestic markets is a source of livelihood to those who engaged in it and can generate foreign exchange earnings to exporting nations. Aliyu *et al.* (2020) stated that tomato is an important vegetable which supplies vitamins, minerals and fibres to its consumers and is of high nutritional values. They further opined that it is widely accepted and commonly used in a variety of dishes as raw, cooked or processed products more than any other vegetable. It provides 3-4 % total sugar, 15-30mg/100g ascorbic acid, 7.5-10mg/100ml treatable acidity and 20-50mg/100g fruit weight of lycopene-antioxidants for cancer prevention especially those of the prostate gland, lungs and stomach.

Materials and Method

The study was carried out in Anambra State, Nigeria. Anambra State is an agrarian State with several raw materials and agro products being produced in various parts of the State. Some of the crops grown in the State include oil palm, maize, rice, groundnut, cassava, cucumber, tomato, watermelon, greenbean, soyabean, livestock such as goats, sheep, poultry and cattle are also raised. Anambra State is an agrarian State. The State occupies an area of 4,844 KM^2, geographically and lies within longitude 5^o55^1 and 6^o42^1N. The population of the State is 4, 182,232 with population density of 863 persons per km^2 (NPC, 2006). The state has several daily markets both in the rural and urban areas

where agricultural goods are sold especially fresh tomato known as *Ogbo-tomato* market. Fresh tomato is a thriving business in the State due to its nutritional and medicinal value. The study population was made up of all fresh tomato marketers in the State. Multi-stage sampling procedure was used to select 9 Local Government Areas, 9 daily fresh tomato markets and 180 intermediaries (45 wholesalers and 135 retailers) for the study. The respondents were selected based on the size of the markets; details of the process were given as: In stage one, three agricultural zones were randomly selected from the four agricultural zones of the State. In stage two, three LGAs were randomly selected from each of the three selected agricultural zones making it a total of 9 LGAs. Stage three involved a purposive selection of one daily market with large number of consumers from each of the selected LGAs. A total of nine markets were selected for the study. In stage iv, twenty fresh tomato marketers (five wholesalers and fifteen retailers) were selected from each of the selected nine markets in stage iii making it a total of 180 respondents for the study.

Results and Discussion

Market structure of fresh tomato marketing

Agada and Ocholi (2021) stated that market structure is the nature and degree of competition in the market for goods and services. Thus, the structure of market for both food (goods) and services (factor) market are determined by nature of competition prevailing in a particular market. Result of the analysis of market structure using Gini coefficient is shown in Table 1 and Table 2 respectively. The results revealed a Gini coefficient of 0.7565 and 0.7139 for wholesalers and retailers respectively. The implication is that there is a high level of income inequalities (sales margin) in the distribution of income among the marketers and high concentration of sales in the hand of few marketers thus the existence of imperfect competition in the market. The variation is quite more among the wholesalers because of time and place utilities advantages. Isibor and Nkamigbo (2023) in their study of turmeric market stated that Gini coefficient of 0.6866 for wholesalers and 0.7495 for retailers were indication of high level of income inequality in terms of sales margin distribution among the marketers and a concentration of sales in the hands of a few individuals. It further revealed the existence of imperfect competition in the turmeric market where certain marketers may have the ability to influence product prices. This agrees with Ugwumba *et al.* (2019), Osundare *et al*. (2020), Jonathan and Zanding-Fibi (2023) and Isibor *et al.* (2023) who reported a Gini coefficients of 0.6278, 0.83, 0.68 and 0.7026 for watermelon, tomato, vegetables and fresh pepper marketing in their study areas.

Table 1: Estimated Gini Coefficient of the marketing agents (wholesalers)

Monthly sales (₦)	F	Proportion of WTs(X_1)	Cum. of WTs (₦)	TMS (₦)	Cum. Pro of TMS Y_i	X_1Yi
220,000-420,000	17	0.3777	55,348,982.10	0.3777	0.2570	0.0970
421,000-621,000	12	0.2666	50,425,412.56	0.6443	0.2341	0.0624
622,000-822,000	10	0.2222	39,069,059.00	0.8665	0.1814	0.0403
823,000-1,023,000	6	0.1333	70,501,842.54	0.9998	0.3273	0.0436
Total	**45**		**215,345,296.00**			**0.2436**
GC = 1 - $\sum X_1Y_i$	=	1 - 0.2436 =	0.7565			

Note: WTs = Wholesalers, Pro = Proportion, Cum = Cumulative, TMS Total monthly sales.
Source: Field survey, 2025.

Table 2: Estimated Gini Coefficient of the marketing agents (retailers)

Monthly sales (₦)	F	Proportion of WTs(X_1)	Cum. of WTs (₦)	TMS (₦)	Cum. Pro of TMS Y_i	X_1Yi
90,000-120,000	29	0.2148	8,186,182.00	0.2148	0.1393	0.0299
121,000-151,000	38	0.2814	15,745,061.00	0.4962	0.2679	0.0753
152,000-182,000	23	0.1703	5,965,621.00	0.6665	0.1015	0.0172
183,000-213,000	45	0.3333	28,864,647.00	0.9998	0.4912	0.1637
Total	**135**	**0.9998**	**58,761,511.00**			**0.2861**
GC = 1 - $\sum X_1Y_i$	**=**	**1 - 0.2861**	**= 0.7139**			

Note: RTs = Retailers, Pro = Proportion, Cum. = Cumulative, TMS =Total Monthly Sales.
Source: Field survey, 2025.

Market Conduct of Fresh Tomato Marketers

This describes the pattern of behavior of fresh tomato marketers in adapting to the market situation. It involves criteria for purchase, strategies for fixing selling price (price determination), membership of market union, entry mode, free entry and exit, sources of market information, and marketing strategies adopted. The result of the analyses carried out on market conduct for fresh tomato are discussed and further presented in Table 3. The table presents the distribution of respondents according to indicators of market conduct for fresh tomato in the study area. On criteria used for purchase, the result showed that wholesalers (42.22%) and retailers (60.00%) considered degree of freshness as major criteria for purchase. Also, wholesalers (33.33%) considered absence of harvest cuts and breakage while retailers (32.59%) considered degree of freshness as another criterion, while degree of freshness and absence of harvest cuts and breakages on the fruits were the least considered criteria by both wholesalers and retailers with indications at 24.44% and 7.40% respectively.

On strategies for fixing selling price, the findings revealed that majority of the wholesalers (46.6%) and retailers (74.07%) used common pricing techniques of fixing price after considering expenses

incurred. This is in consonance with the findings of Nkamigbo et al, (2019), who reported consideration of expenses incurred as a tool for fixing price among watermelon marketers. Fresh tomato market price in the study area was also determined through bargaining as indicated by 33.33% of wholesalers and 22.22% of retailers. This agrees with Ocholi and Gege (2023), who reported bargaining as a tool for price determination among ginger marketers in Benue State. Demand and supply push as a determinant of price was indicated by 18.8% and 25.6% for wholesalers and retailers respectively. The result on Table 3 indicated that majority (86.66% and 96.29%) of wholesalers and retailers respectively were members of market union. On sources of market information, the result indicated that majority (64.44%) and 89.62%) of wholesalers and retailers respectively, obtained their market information from fellow marketers. The result also revealed that 26.66% and 10.37% of wholesalers and retailers respectively sourced information from market unions. On marketing strategy adopted, the results showed that majority 37.77% and 74.81% for wholesalers and retailers respectively applied the strategy of creating customer friendly attitudes in selling their products. Cleaning the seed of tomato was another strategy for the wholesalers (42.22%) and retailers (17.03%).

Table 3: Market conduct of fresh tomato marketing

Variables	**Wholesalers**		**Retailers**	
Criteria for purchase	**F**	**%**	**F**	**%**
Degree of freshness	11	24.44	44	32.59
Size of basket	19	42.22	81	60.00
Absence of harvest cuts and breakages	15	33.33	10	7.40
Total	**45**	**100**	**135**	**100**
Strategies for fixing selling prices				
Fix price after consideration of purchase price and other expenses	21	46.66	100	74.07
Fix price through bargaining	15	33.33	30	22.22
Demand and supply push	9	20.00	5	3.70
Fix prices by tomato marketers union	-			
Total	**45**	**100**	**135**	**100**
Membership of market union				
Yes	39	86.66	130	96.29
No	6	13.33	5	3.71
Total	**45**	**100**	**135**	**100**
Entry mode				
By registration	45	100.00	135	100.00
By chance	-			
Total	**45**	**100**	**135**	**100**
Free entry and exit				
Yes	45	100	135	100
No	-			
Total	**10**	**100**	**135**	**100**

Sources of market information				
Fellow marketers	29	64.44	121	89.62
Middlemen	4	8.88	-	
Market union	12	26.66	14	10.37
Total	**45**	**100**	**135**	**100**
Marketing strategy adopted				
Customer friendly attitude	17	37.77	101	74.81
Selling at strategic point	9	20.00	-	
Selling clean and neat fresh	19	42.22	23	17.03
Selling below prevailing market prices	-		10	7.40
Total	**45**	**100**	**135**	**100**

Source: Field Survey, 2025

Profitability of fresh tomato marketing among the intermediaries

Enterprise budgeting analysis was used to estimate the monthly profitability of fresh tomato marketing among the intermediaries as shown in Table 4. Result of the analysis indicating total cost (TC), total revenue (TR), total variable cost (TVC), total fixed cost (TFC), gross margin (GM), net marketing income (NMI), mean net marketing income (MNMI) and net return on investment (NROI) is presented in Table 4. The Table of analysis revealed that out of the total cost of ₦137,784,581.7 spent by the wholesalers, purchases constituted 89.47 % while the least of the expenditure was on Ego ani and Job (0.34). In the other hand, the retailers spent 91.56% of the total cost on purchases and 1.0% on ego ani as the least expenses. For the intermediaries, product cost constituted 89.98% of the total cost of marketing while least expenditure was loading (0.55%). From the analysis, the result is in agreement with Nkamigbo *et al.* (2019), Sodeeq *et al.* (2021) and Osunmakinde *et al.* (2024) who reported in their studies of tomato marketing in their area that cost of stock purchase account for 88.3 and 92.1% of the total cost of marketing of fresh tomato to become the most important cost to consider in starting the marketing business. On enterprise profitability, the wholesalers realized ₦215,345,296.00 after spending a total variable cost of ₦136,249,810.80 and a total cost ₦137,784,581.7. This transaction generated a gross margin of ₦79,095,485.20, net marketing income of ₦77,560,714.30, mean net marketing income of ₦1,723,571.4. the retailers also generated gross margin of ₦14,502,986.00, net marketing income of ₦12, 409,249.1 and net return on investment of 0.267. The implication of the net return on investment figures is that the wholesalers and retailers respectively return 56 kobo and 26 kobo for every 1 Naira invested in the enterprise. Overall the profitability indicators (gross margin, net marketing income, mean net marketing income and net return on investment values) showed that fresh tomato marketing was profitable both at the wholesale and retail levels marketing. Nkamigbo et al. (2019) and Sodeeq *et al.* (2021) attested to the profitability of fresh tomato marketing Nnewi metropolis and Oyo State.

Table 4: Estimated Monthly Profitability of Fresh Tomato Marketing by the Intermediaries

Variable	WHs	% of TC	RTs	% of TC	WH & RT	% of TC
Total Revenue TR	215,345,296.00		58,761,511.00		274,106,807.00	
Variable Cost (VC)						
Purchases	121,905,383.20	89.47	40,525,180.00	91.56	162,430,563.20	89.98
Ego ani and Job	463,872.00	0.34	732,000.00	1.65	1,195,872.00	0.66
Transportation	11,657,897.60	8.55	1,944,000.00	4.39	13,601,897.60	7.53
Loading	1,010,543.00	0.74	-		1,010,543.00	0.55
Miscellaneous cost	1,212,115.00	0.88	1,057,345.00	2.38	2,269,460.00	1.25
Total Variable Cost (TVC)	136,249,810.80	100	44,258,525.00	100	180,508,335.80	100
Fixed Cost (FC)						
Monthly shop rent/display stand	981,348.00	63.94	1,487,268.00	71.03	2, 468, 616.00	68.03
Depreciation on equipment	432,985.00	28.21	601,456.00	28.72	1,034, 441.00	28.50
Interest on loan	120,437.90	7.84	5,012.90	0.23	125,450.80	3.45
Total Fixed Cost (TFC)	**1,534,770.90**	**100**	**2,093,736.90**	**100**	**3,628,507.80**	
Total Cost (TC)	137,784,581.7		46,352,261.90			
Gross margin	79,095,485.20		14,502,986.00			
Net Marketing Income	77,560,714.30		12, 409,249.1			
NMI Mean	1,723,571.4		91,920.36			
Return on Investment	1.56		1.267			
Net Return on Investment	0.56		0.26			
Gross Ratio	0.63		0.788			
Marketing Efficiency	63		78.8			

Source: Field Survey, 2025

Marketing Efficiency of Fresh Tomato Marketing

The Sherpherd-Futrel technique was employed to determine the co-efficient of marketing efficiency. The technique expresses marketing efficiency as the ratio of the total cost to total revenue expressed as percentages. The lower percentage, the better the marketing efficiency since less proportion of the revenue will be expanded on the total cost of marketing.

The model is slated as:

$$ME = \frac{TC}{TR} \times \frac{100}{1}$$

For wholesalers ME = $\frac{137,784,581.7}{215,345,296.00} \times \frac{100}{1} = 0.639$

For retailers ME = $\frac{46,352,261.90}{58,761,511.00} \times \frac{100}{1} = 0.788$

The result of the analyses revealed that none of the intermediaries attained efficiency of 100% in the marketing of fresh tomato implying the existence of good level of inefficiencies among the intermediaries (wholesalers and retailers). The level of inefficiency was higher (78.8%) among the

retailers than the wholesalers (63%) implying the wholesalers were more efficient in the marketing of fresh tomato than the retailers. This can be explained that the wholesalers have economic of sales, they buy in bulk from producers and sale to retailers and sometimes the end users. The finding is at variance with the report of Abdurrahman et al. (2022) who reported a marketing efficiency 273.34% and 168.24% for retailers and wholesalers of fresh tomato marketing in their study area which is greater than unity which implies that the operation involved in the marketing of fresh tomato is efficient.

Constraints to fresh tomato marketing

The constraints militating against fresh tomato marketing in the study area were shown in Table 5 for both the wholesale and retailers respectively. From the Table both the wholesalers and retailers had similar constraints but some were more pronounced in the wholesale than retail marketing and vice versa. For the wholesalers, the problem of perishability nature (M=3.50) of the product was perceived as the most serious constraints of fresh tomato marketing in the study area. The product doesn't last for a long time after harvesting without storage and in the course of transportation if there is delay on the road the produce begins to riot which reduces the value and invariably affects the selling price. Another constraint of great importance is high market fees (M=3.30) collection by government agencies and market union. This has adversely affected the profit margin of the produce as most of them complain that the tax is becoming unbearable from day to day. Transportation of fresh tomato (M=3.15) fruits from the point of production to the market constitutes among the highest marketing cost incurred by the marketers and sometimes the produce do damage on the cost of transportation thus increasing the marketing cost of the marketers. Sit at home palaver (M=3.05) is a very great sabotage of the economy which hinders free flow of marketing on the said days although government is doing everything to stop it but no minimal effect has been recorded. Other constrains that affect fresh tomato marketing at the wholesale level but not of great importance were poor storage facilities (M=3.01), breakage on transit (M=2.49), irregularity of supply (M=2.40) and high cost of product (M=2.35).

For the retailers, the most serious perceived constraint was perishability of the product (M=3.50). This particular constraint affects the retailers most as they are the one that deals with the end users mostly. If the produce remains for day without been sold, it starts deteriorating thus affecting the marketing cost and profit margin. Sit at home (M=3.05) has become a major economic set back to most of the perishable goods in the study area. This has affected the retailers so much that some of them do come out in the evening to a market called *Uwa Mgbede* (evening market) to make sure that their products are sold in order to minimize losses and maximize profit. High market fees (M=3.30)

collection by agents of government is becoming a threat to marketers most especially the retailers. In order to avert this some of them have damage their tomato in the bid to run away thus affecting their profit margin. Poor storage facilities (M=3.05) is becoming worrisome to both farmers and marketers of perishable product as no well-known preservation tool is available to preserve their produce. Marketers sometimes sell below cost price when they notice that the fruit may riot if not sold immediately thus reducing the profit. Other constraints to fresh tomato marketing in the study area were high cost of product (M=2.45), irregularity in supply (M=2.30), high cost of transportation (M=2.25) and breakage on transit (M=2.20).

Table 5: Constraints to fresh tomato marketing

Constraints	Wholesalers mean score	Rank	Retailers mean score	Rank
Sit-at-home palaver	4th	3.05	2nd	3.02
Poor storage facilities	5th	3.01	4th	2.50
Perishability nature	1st	3.50	1st	3.10
High market fees by government	2nd	3.30	3rd	2.80
High cost of transportation	3rd	3.15	7th	2.25
Irregularity in supply (seasonality)	7th	2.40	6th	2.30
High cost of product	8th	2.35	5th	2.45
breakage on transit	6th	2.49	8th	2.20

Source: Field survey, 2025

Conclusion

The study examined profit analysis and market structure of fresh tomato marketing in Anambra State, Nigeria. The study specifically described market structure, market conduct, cost and returns and constraints to fresh tomato marketing in the study area. The findings showed that perishability, high market fees by government and high cost of transportation were perceived as the most serious constraints of the wholesaler's while perishability, sit at home palaver were perceived as serious on the retailers. Fresh tomato marketing in Anambra, Nigeria is a profitable enterprise both at the wholesale and retail levels given the positive values of gross margin, net marketing income, mean net marketing income and return on investment. The marketers were efficient in the business although inefficiencies still existed among their activities due to marketing constraints. The study recommended that the level of profitability would improve if adequate measures are taken by government and marketers to address marketing constraints.

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