Profitability of Tomato Marketing and Determinants in Akinyele Local Government Area, Oyo State, Nigeria

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ARTICLE INFO	ABSTRACT
	Marketing of tomatoes is a complex phenomenon due to it perishable nature, seasonality and bulkiness. Tomato thus requires an efficient marketing system. The targeted population for this study was tomato retail marketers in major markets in Akinyele Local Government Area of Oyo State. A Cross sectional data collected with the use of well structured interview guide from 112 marketers selected through multistage sampling techniques were analyzed using descriptive statistics, gross margin analysis and ordinary least square regression model. Results revealed that majority of the marketers were female with mean age of 43 years. Their average marketing experience and mean household size were 20 years and 8 members respectively. Farm gate to consumer was the major marketing channel mostly used in the area with quality and grading/sorting of tomato considered as very important factor in price formation. The gross margin of N 17,787.564 per month was estimated and education variable which was found significant indicates that it is an essential policy element with potential to improve marketers' profitability. Most of the marketers were however faced with poor credit access, inadequate capital and high cost of purchasing tomatoes from farm gate. This study thus recommended that marketers should strengthen themselves by forming cooperative groups to improve their access to credit and market oriented policies that lower the costs of marketing should be vigorously pursued by government to enhance better tomato market performance and profitability.

INTRODUCTION

Agriculture is an important sector in most developing countries owing to its source of employment and array of commodities produced (Sodeeq *et al.*, 2019). It contributes more than 30% of the total annual GDP and provides over 80% of the food needs of the country (Adegboye, 2004). Increase in agricultural productivity depends heavily on its marketability. Agricultural marketing articulates all processes that take place from when the farmer plans to meet specified demands and market prospects to when the produce finally gets it to the consumers *(*Haruna *et al.,*2012). It is the marketing function that ensures that consumer acquires the product in the form, places and time desired (Olukosi and Isitor, 2004). Efficient market does not only link sellers and buyers in reacting to current situations in supply and demand but rather has a dynamic role to play in stimulating consumption of outputs which are essential elements of economic development (Haruna *et al.,*2012). Tomato (*Solanumly copersicum)* being one of the most popular and widely grown fruit in the world (Agrios, 2003) ranked second in terms of the amount of vitamins and minerals it contributes to the diet. Apart from being consume at home, it also a source of foreign exchange to the producer's countries (Enrique and Eduardo, 2006).

In Nigeria, tomato clearly stands out both in scale of production and level of consumption (Adewuyi *et al.,* 2015). However, it marketing is poorly developed. It is characterized mainly by the problem of seasonality and perishability amongst others (Amao, 2010). Worst still, more attention is given to production with little attention to it marketing (Idachaba, 2000). Storage facilities for tomato are lacking. This hinders large purchase by marketers and decreases production by farmers. Improper handling of tomatoes after harvest lowers quality and causes losses (Olukosi et al., 2007). In view of the aforementioned problems, this study investigates profitability of tomato marketing and its determinants in Akinyele Local Government Area of Oyo State with aim to describe the socio economic characteristics of tomato marketers, identify the marketing channels used, determine the price formation, estimate the costs and return, determine the factors influencing profitability and identify the constraints faced in tomato marketing in the study area.

METHODOLOGY

The study area for this study was Akinyele Local Government Area of Oyo State. It is one of the eleven Local Governments that make up Ibadan metropolis with headquarter at Moniya. The local government area was created in 1976 and occupies a land area of 464.892 square km with a population density of 516 persons per square kilometre. This study area was chosen because of the preponderance of major markets with tomato marketers. Cross sectional data were collected through the use of interview guide and two-stage random sampling technique was used to select marketers. In the first stage, 5 major markets were randomly selected out of 13 markets in the area. These are Akinyele market, Iware market, Onidundu market, Ojoo market and Moniya market. The last stage was a random selection of twenty four (24) marketers from each of the selected markets making a total number of 120 respondents. Due to problem of missing data, data from one hundred and twelve (112) marketers were eventually used and analysed using descriptive statistics, Gross margin and Ordinary Least Square Multiple Regression

Model Specification and Measurements of Variables

Gross Margin

In the estimation of cost and return, Gross Margin Analysis was used to determine the profitability of tomato marketing. It was specified as;

$$GM = TR - TMVC \tag{1}$$

Where GM = Gross Margin, TR = Total Returns and TMVC = Total Marketing Variable Cost

Ordinary Least Square Multiple Regression

Ordinary least square multiple regression was used to analyze the factors influencing profitability of tomato marketing. The empirical model for the ordinary least square multiple regression was specified implicitly as follows:

$$Y = B_O + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + B_5 X_5 + \mu \tag{2}$$

Where Y = Total marketing profit derived from gross margin, X_1 = Age of the marketers (years); X_2 = Education in years; X_3 = Marketing Experience (years) X_4 = Household size (No. of persons); X_5 = Secondary occupation (Farming =1, Trading = 2, Civil servant = 3, Others = 4); μ = Error term

RESULTS AND DISCUSSION

Socio economic characteristics of the respondents

Results as shown in table 1 revealed that majority (99.1%) of the marketers were female. This is an indication that marketing of agricultural products is largely attributed to women. This result corroborates the work of Sodeeq *et al.*, 2020; 2016; Aremu *et al.,* 2016. Approximately 55.0% were between 31-40 years of age, 18.8% were within the age range of 51-60 years while

few (8.0%) were above 60 years. Their mean age was 43years; this shows that adult females are mostly involved in tomato marketing. They are considered physical and mentally alert (Sodeeq *et al.*, 2020). Majority (76.8%) had no formal education, 10.7% had primary education and 6.2% had either Quranic or secondary education. The level of education attended to a large extent determines the strategies use in solving marketing problem and adoption of innovation that increases profit (Lawal and Idega, 2004). More than half (53.3%) had 1-5 household members, 18.8% had 6-10 household members, 17.0% had 11-15 household members, 7.1% had above 21 household members and

3.6% had 16-20 household members. The mean household size was 8 members which is higher than the national average (Isitor, 2019; Babalola, 2014; NBS, 2007). This is expected to provide family labour and put pressure on proceeds from tomato marketing. Majority (31.3%) had 11-20 years of marketing experience, 25.9% had within 1-10 years, 20.5% had 21-30 years while 3.5% had above 40 years experience. The average year of experience of these marketers was 20 years. This implies that the marketers had much knowledge and exposure in tomato marketing (Oladejo and Oladiran, 2014).

**Table 1: Socio economic characteristics of the respondents**

Variables	Frequency n=112	Percentage	mean
Sex			
Male	1	0.9	
Female	111	99.1	
Age (years)			
21-30	1	0.9	
31-40	64	55.4	
41-50	13	11.6	
51-60	25	18.8	
61 and above	9	8.0	43
Educational status			
No formal education	86	76.8	
Quranic education	7	6.2	
Primary	12	10.7	
Secondary	7	6.2	
Household size			
1-5	60	53.3	
6-10	21	18.8	8
11-15	19	17.0	
16-20	4	3.6	
21 and above	8	7.1	
Marketing experience (year)			
1-10	29	25.9	
11-20	35	31.3	
21-30	23	20.5	20
31-40	21	18.8	
Above 41	4	3.5	

Source: Field survey, 2019

Tomato Marketing Channel and Price formation in the Study Area

The result in figure 1 revealed that farmgate-consumer (34.0%) is mostly used for tomato marketing in the study area. This is followed by farmgate-wholesaler-consumer (27.0%), farmgate–wholesaler-retailer-consumer (20.0%) while farmgate-retailer-consumer accounted for 19.0%. it could be inferred that retailers' participation was 39.0% in tomato marketing. This result corroborates the work of Haruna *et al.* (2012) that the channel mostly used by the respondents in marketing was farm gate-consumer and contrary to Oladejo and Oladiran, 2014 who reported 54.6% for tomato retailers in ogbomoso. The quality of tomato (83.3%) was considered very important in price formation by majority (table 2). This was closely followed by grading/sorting of tomato (77.7%) and bargaining/negotiation (74.1%)

as important factor in tomato price formation. This is an indication that quality of tomato and grading/sorting attract consumers and probably increase the profitability of the marketers.
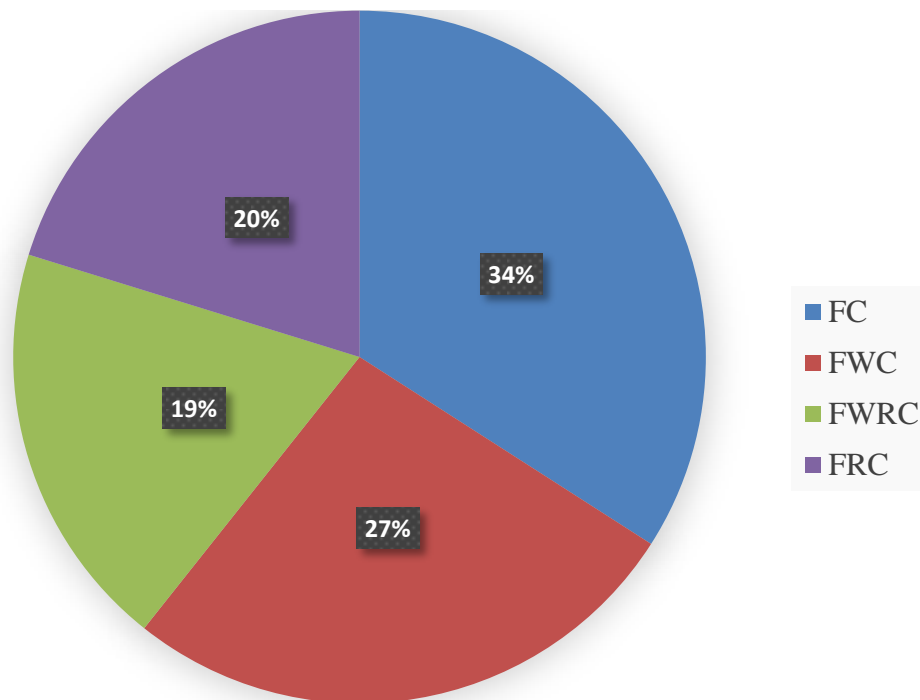
Fig. 1: Showing Marketing Channel of tomato in Akinyele Local Government Area
FC: Farm gate - Consumer
FWC: Farm gate -Wholesaler - Consumer
FWRC: Farm gate- wholesaler – Retailer - Consumer
FRC: Farm gate – Retailer - Consumer

Table 2: Price formations of tomato

Determinants	VI	I	SI	NI	Rank
Bargaining/negotiations	24(21.4)	83(74.1)	5(4.5)	0(0.0)	5th
Quality	94(83.3)	15(13.4)	3(2.7)	0(0.0)	1st
Grading/Sorting	87(77.7)	19(17.0)	6(5.4)	0(0.0)	2nd
Farmgate price	49(43.8)	46(41.1)	16(14.3)	1(0.9)	4th
Basket	51(45.5)	28(25.0)	27(24.1)	6(5.4)	3rd

Source: Field survey; 2019 VI: Very Important, I: Important, SI: Slightly Important: NI: Not Important. Values in parenthesis are in percentage.

Profitability of Tomato Marketing

The cost and return analysis of fresh tomato marketing is presented in Table 3. The cost of purchase (₦511.84 per basket) which accounted for 92.1%, cost of market labour (1.5%) and storage cost (1.3%) were the major variable costs incurred in tomato marketing. Based on the computation per basket per month, 190 baskets of tomato were sold on the average at average selling price of ₦646.88 per basket. This gives estimated total revenue of ₦122,907.2 and a gross margin of ₦ 17,270.06 per month.

Table 3: Profitability of Tomato marketing

Variable	Average Cost/Basket	Percentage
Tomato bought	₦ 97,250.00	92.1
Market Dues/levy	₦891.96	0.8
Government levy	₦ 883.48	0.8
Storage	₦ 1,385.5	1.3
Market labour	₦ 1,546.4	1.5
Transportation	₦ 268.8	0.3
Loading	₦ 1,045.1	1.0
Offloading	₦ 1,276.3	1.2
Basket	₦ 1,089.6	1.0
Total Variable Marketing Cost (TVMC)	**₦ 105,637.14**	
Quantity of tomato sold (basket)	190.0	
Selling price of tomato	₦ 646.88	
Total revenue (TR)	**₦ 122,907.2**	
Gross margin (GM)	**₦ 17,270.06**	

Determinants of Profitability

The result in table 4 shows R^2 = 0.793 implying that 79.3% of variation in dependent variable is explained by independent variables. The coefficient of age was significantly negative at 1% indicating that marketers' profit decreases as the age increases. This result agrees with a prior expectation and report by Adewuyi *et al.* (2015). Coefficient of education was found positive and significant at 5%. This implies that additional year of formal education received by a tomato marketer increases their profit. This conforms to a priori expectation. Nwaru (2004) asserted that education helps to unlock the natural talents and inherent enterprising qualities of marketers; making them more skilled, amenable to risk taking and change. Coefficient of experience was significant and contributed positively to marketers' profit. Experience makes an individual get used to frequently done activities and improve the receipt from such activities (Sodeeq *et al.*, 2016). However, household size and secondary occupation were not significant factors influencing marketers' profitability.

Table 4: Determinants of Profitability

Variable	B	Std. Error	t-value	Sig. Value
Constant	1.2609	0.3044	4.1416	0.0002***
Age	-0.2210	0.560	-3.9580	0.0010***
Education	0.1223	0.0550	2.2244	0.0282**
Household size	0.0082	0.0058	1.4214	0.1581
Marketing experience	0.5607	0.1266	11.1932	0.00123***
Secondary occupation	-0.0510	1.9760	-0.0260	0.9790

Source: Field survey; 2019. R^2 = 0.793; *** significant at 1%; ** significant at 5%

Constraints Faced by Tomato Marketers

Table 5 revealed constraints faced by tomato marketers. The result shows that majority (97.3%) of the marketers faced poor credit access followed by inadequate capital (95.5%), high cost of purchasing from farm gate (94.6%), price fluctuation (83.0%), storage problem (73.2%) and perishability (73.2%).These hindered the marketers in maximizing revenue and profit in tomato business.

Table 5: Constraints faced by tomato marketing

Constrains	Very Severe	Severe	Not Severe	Rank
High cost of purchase	106(94.6)	6(5.4)	0(0.0)	3rd
Poor credit access	109(97.3)	3(2.7)	0(0.0)	1st
Inadequate capital	107(95.5)	4(3.6)	1(0.9)	2nd
Price fluctuation	93(83.0)	17(15.2)	2(1.8)	4th
Storage problem	82(73.2)	30(26.8)	0(0.0)	5th
Poor marketing information	70(62.5)	35(31.2)	7(6.2)	8th
Perishability	82(73.2)	24(21.4)	6(5.4)	6th
Road access problem	76(67.9)	25(22.3)	11(9.8)	7th
High market levy	57(50.9)	33(29.5)	22(19.6)	9th

Source: Field survey; 2019

CONCLUSION

This study assesses tomato marketing among retailers in selected market at Akinyele Local Government area of Oyo state, Nigeria. The tomato marketers were dominated by females with an average age of 43 years and mean household size of 8 members. Farmgate-consumer is the most used marketing channel in the study area. For price formation, quality and grading/sorting of tomato were considered very important factors. The costs and returns analysis indicated that tomato marketing was profitable with a monthly gross margin of ₦17,270.06 while the regression result revealed that age, education and marketers' experience have significant influence on the profit. Furthermore, poor credit access, inadequate capital, high cost of purchasing from farm gate, price fluctuation, storage problem and perishability were the constraints faced by the marketers.

RECOMMENDATIONS

1.   Marketers should strengthen themselves by forming cooperative groups to benefit from economies of scale and improve their access to credit.
2.   Marketers should endeavour to acquire formal education as this will contribute to efficient marketing.
3.   Government should provide infrastructural facilities which may help to improve storage.
4.   Policies and strategies that lower the costs of marketing should be vigorously pursued by government to enhance better marketing performance and profitability.

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