

SOCIOECONOMIC DETERMINANTS OF PROFIT IN WHOLESALE AND RETAIL BANANA MARKETING IN UMUAHIA AGRICULTURAL ZONE OF ABIA STATE, NIGERIA

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ABSTRACT

The perishable nature of most agricultural produce and the concomitant need for effective marketing outlets have been obvious economic problems, especially in developing countries, like Nigeria. This study attempted to examine the determinants of profit in banana marketing in the Umuahia Agricultural Zone of Abia State of Nigeria. Cross-sectional data, collected from a random sample of 60 banana marketers consisting of 30 retailers and 30 wholesalers, were analyzed using the multiple regression technique of the ordinary least squares. Results showed that for the retailers, the quantity of bananas handled and the selling price per unit of bananas were directly related to the profit, while age of the marketer and the purchase price per unit were inversely related to it. Policy efforts to help in eliminating the constraints to banana marketing were recommended. Such policies should enable the marketers to acquire more education through adult education, seminars, workshops, etc. and should be targeted more at the younger marketers. They should enable them to increase their scale of banana marketing operations.

Keywords: Socioeconomics; Wholesale and Retail Marketing; Bananas; Nigeria

INTRODUCTION

The banana is of the genus *Musa* and originated in southwest Asia (the area between India, Papua, New Guinea, and Pacific Island), where the wild species *Musa accuminata* and *M. balbisiana* occur. With increasing urbanization, banana and plantain are playing more important roles in fighting against poverty because they are one of the cheapest food crops to produce and can be afforded by low-income families. Therefore, they are increasingly coming into focus as household crops in Nigeria. The majority of the producers are small-scale farmers, who grow the crop either for home consumption or for local markets; hence the analysis of the marketing of bananas is becoming very important.

Amongst the myriad of problems confronting agricultural production in Nigeria, poor post-harvest handling practices has been fingered as a major culprit. For instance, Echebiri and Mejeha (2004) observed that poor storage and marketing facilities have further compounded the problems of low resource productivity and efficiency, which was reported by scholars like Ohajianya and Onyenweaku (2002) and Nnadozie and Nwaru (2005). An efficient marketing system ensures that the supply of goods, even those that are seasonal, is all year round, with little variation in prices, which can be attributed to high cost of storage; a situation which makes both the producers and consumers better off (Adegeye and Dittoh, 1982). Khols and Uhl (1985) observed that the perishable nature of agricultural products resulted in urgency in the marketing of these products. Marketing of food items is of great importance because domestic food security is closely related to it. The problem of food insecurity is made worse by the rising prices of staple foods, a large percentage of

which arises through the operation of the price mechanism. However, Abbot (1957) and Obasi (2008) noted that serious inefficiencies characterized the operation of the marketing system in most developing countries as a result of so many socioeconomic, political, and other constraints militating against marketing efficiency. For instance, Echebiri and Mejeha (2004) opined that unpredictable fluctuations in the prices of various food products have become a common feature in the nation's economy; a situation that has led to the consumers of agricultural products paying so much while the producers receive lower prices. Moro (1994) noted that in the marketing of food products in Rivers State of Nigeria, as in many other parts of the country, the wholesalers and retailers exercised strong economic power in price determination and that this was responsible for wide variations in their mark-ups and unpredictable fluctuations in the prices of rice, garri, and yam.

Therefore, the broad objective of this study was to analyze the economics of banana marketing in Umuahia Agricultural Zone of Abia State, Nigeria. In this context, the marketing margins and profits of banana wholesalers and retailers and their determinants were derived and examined. The bananas are no doubt, very important in the food basket of Nigerians. Moreover, it is a prominent source of income to the producers and marketers, especially during times of slack farm activities.

Literature Review

A market is a medium wherein exchange of ownership of commodities takes place. It is an arena that provides the much needed interaction of the forces of demand and supply, irrespective of the physical location of buyers and sellers. It aims at organizing and facilitating business activities and answering the basic questions of what to produce, for whom to produce it for, and how to produce and distribute it. Abbot (1957) and Olukosi and Isitor (1990) defined marketing as the performance of all economic activities involved from the production point to the ultimate consumers. In a broader sense, marketing is a total system of interacting business activities designed to plan, price, promote, and distribute satisfying products and services to present and potential customers. Olukosi and Isitor (1990) and Crammer and Jensen (1991) stated that marketing is concerned with those productive activities that add time, place, and form utilities to agricultural commodities. Furthermore, Abbot and Markeham (1986) opined that marketing of agricultural products begins at the farm, when the farmer plans his production to meet specific demands and market prospects.

Anyanwu (1993) opined that marketing consists of business activities that seek to anticipate, help in developing, and making the products and associated services available to the satisfaction of the consumers or users, and at a profit to the marketer. This definition is unique in the sense that it makes overt the profit element since marketing is also practiced by nonprofit making organizations. He also identified marketing as that aspect of economics concerned with the exchange and valuation of goods and services. Adegeye and Dittoh (1982) reported that the activities involved in marketing are assembling, transportation, processing, storage, and financing. Agricultural marketing encompasses all processes and services involved in moving food and farm products from the farm, where they are produced, to consumers located in urban and rural areas.

Market structure could be defined as those characteristics that affect the behavior and performance of firms that sell in the market. These include all firms in a particular marketing channel. Market structure is concerned with those characteristics of the organization of a market, which seem to influence the nature of competition and pricing within the

market (Abbot & Markeham, 1986). The factors that determine market structure include the number and relative size of buyers and sellers; the degree of product differentiation; the ease of entry and exit of sellers into and out of the market; and the status of knowledge about cost, price, and the conditions among the participants in market (Mejeha, Nwosu, A.C., & Ifenkwe, 2000). Moro, (1994) identified four types of markets for foodstuffs as primary markets, feeder markets, central markets, and terminal markets. The primary markets are grouped into urban and rural primary markets by virtue of their location. Food products marketing in Nigeria faces structural problems, which affect marketing efficiency. In agreement, Echebiri and Mejeha (2004) noted that there are many participants in the marketing of food products, which is a major reason for the observed lack of organization in terms of location of wholesalers and retailers.

Adekanye (1988) and Abbot and Markeham (1986) described market performance as the assessment of how the processes of marketing are carried on. According to Crammer and Jensen (1991), market performance is the reflection of structure and conduct or product price, costs, volume, and quality. Specifically, market performance is concerned with technological advancement, growth orientation of firms' efficiency in resource use, product improvement, and maximum market service at the least possible costs (Adegeye & Dittoh, 1982). Market performance deals with the following questions: is produce assembled and delivered on time without wastage? Is the quality reliable and contracts kept? Is the consumption of the produce increasing? Are sales in competitive markets expanding?

Marketing margin is the difference between the purchase price and the price received on sale. The overall marketing margin is the difference between the price paid by the consumer and that received by the producer. The difference is usually made up of the margins taken by wholesalers and retailers, plus transport and other charges (Adegeye & Dittoh, 1982; Abbot & Markeham, 1986). There are three major ways of measuring the marketing margin in monetary terms. The first way of measuring the marketing margin is taking a representative supply of a product from a given rural market and tracing what happens to it through the marketing system. Price changes are noted at each stage and the average is derived. Second, the number of units handled divides the gross receipts and outflows along a marketing channel. Margins from each intermediate stage can then be added to obtain the overall margin. Third, prices can be compared at different levels of marketing; this, however, depends on the availability of representative and comparable series of prices at each level.

Marketing cost is referred to as the actual expenses incurred in the performance of the marketing functions as a commodity moves from the farmer (producer) to the final consumer (Olukosi & Isitor, 1990). It also includes the wages, costs of transportation, overhead costs and fees paid for services, handling of marketing charges, costs of assembling, processing, and distribution, and other running costs. David (1977) defined fixed cost as the cost of producing nothing. It does not change with the volume of output of a particular enterprise. An example includes the depreciation of buildings and equipment. On the other hand, variable costs are expenses on variable resources and they change with the volume of output. Examples of variable cost include the costs of casual labor, processing materials, and transportation.

Essentially, the basic roles of marketing are to ensure sustained growth in the economy and the improvement of the standard of living of the people. Busch and Huston (1985) propounded the gap theory to explain extensively the role of marketing in economic development. This theory is based on the premise that marketing does not need to exist until a social system reaches the point where producers of economic goods and services are not the consumers of the same

goods. This situation creates a separation or gap. It is in response to the need to bridge this gap that marketing functions come in. However, an efficient marketing system ensures that the goods which are seasonal will be available all year round, with little variation in prices, which can be attributed to cost of marketing functions, like storage. This situation makes both the producers and consumers better off (Adegeye & Dittoh, 1982). The effectiveness of the marketing process is assessed by the ability of the market to add value to the marketed products by creating time, place, form, and possession utility.

METHODOLOGY

Study area

This research was conducted in the Umuahia Agricultural Zone of Abia State. The major occupation of the people is farming. The main food crops produced include maize, yam, cocoyam, vegetables, cassava, plantain, and banana, while a good number of the people engage in trading on various agricultural produce, either on retail or wholesale basis. Some of the people engage in non-farm economic activities, like craft making, carpentry, and bricklaying.

Sample selection and data collection

Three markets, one urban and two rural, were purposively selected according to the markets where bananas are sold. The rural markets include Ngoro and Ariam and the urban market was Umuahia Main Market. In each market, banana sellers were delineated into retailers and wholesalers. The list of each of these categories of sellers in each market formed the frame from which a simple random sample of 10 wholesalers and 10 retailers were chosen. In all, a total of 60 respondents were chosen for detailed study. Primary data were collected using a set of well-structured questionnaires and personal observations. Pieces of information were collected on the socio-economic characteristics, like the educational background, the age, and the sex, of the respondents. Other variables on which data were collected were the number of bunches of bananas handled, mode of transportation, purchase price and selling price per bunch of bananas, and the problems of banana marketing.

Analytical techniques

Marketing margins can be expressed in cash or in percentage of the retail cost (Abbot & Makeham, 1986; Adegeye & Dittoh, 1982). The formula adopted for this study is (Olukosi & Isitor, 1990):

$$\text{Marketing margin} = \frac{\text{selling price} - \text{purchase price}}{\text{Selling price}} \times \frac{100}{1} \quad (1)$$

Evaluation of the determinants of profit for wholesalers and retailers, separately and pooled, were by the multiple regression analysis. The model used in each case was implicitly expressed as;

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, e_i) \quad (2)$$

Where: Y is the marketing profit (₦) derived as TMR – TMC, where TMR is the total marketing revenue (or returns) from sales and TMC is the total marketing cost. X₁ is the age of the marketer in years; X₂ is the level of education of the marketer in years; X₃ is the cost of transportation in naira; X₄ is the quantity of banana bought for sales in Kg; X₅ is the purchase price in naira; and X₆ is the selling price in naira while e_i is the error term assumed to fulfill all the assumptions of the classical linear regression model. A t-test of differences between means was used to see if a significant difference existed between the means of revenue, costs, and profit for the wholesalers and retailers.

RESULTS AND DISCUSSION

The marketing margin for the retailers and wholesalers are summarized and presented in Table 1. This table indicates that the wholesalers have a lower margin of 46 percent, while the retailers have a margin of 74 percent. This result disagrees with Obasi (2008), who reported a higher gross marketing margin for the wholesalers than the retailers in rice marketing in Abia State of Nigeria. Similarly, Echebiri and Mejeha (2004) reported higher gross and net marketing margins for the wholesalers in Abia State, Nigeria. They reported a gross margin of 12.31 percent and 7.94 percent for the wholesalers and retailers, respectively. However, Scarborough and Kydd (1992) opined that five percent and ten percent marketing margins are acceptable for storable and perishable goods, respectively. This implies that the margins received by the wholesalers and retailers are acceptable.

Table 1: Marketing margin of the retailers and wholesalers

Marketer	Average Purchase Price (₦)	Average Selling Price (₦)	Marketing Margin (Percent)
Retailer	650	2500	74
Wholesaler	900	1650	46

Source: Field survey data, 2006

The summary of the parameter estimates for the factors that affect profit at the retail level is presented in Table 2. Based on the R-Squared value, F-ratio, and the number and signs of significant variables, the semi log functional form was chosen as the lead equation. The model shows that the independent variables accounted for 71 percent of the variation in the retail profit.

Table 2: Estimated determinants of profit for the retailers

Variables	Semi Log	Linear	Double Log	Exponential
Constant	2585.47 (0.95)	8.93 (3.89)***	1806.000 (1.00)*	34.490 (2.20)***
Age	-91.09 (-2.03)*	-0.059 (-1.55)	-2627.380 (-2.17)**	-1.659 (-1.58)
Education	39.32 (0.48)	0.045 (0.67)	821.140 (1.09)	0.707 (1.08)
Cost of transportation	5.52 (1.24)	0.0030 (0.80)	3354.140 (1.27)	1.758 (0.77)
Quantity of banana	0.065 (1.84)*	0.263 (0.76)	22272.670 (0.69)	2.027 (0.72)
Purchase price	-0.408 (-2.38)**	-0.00029 (-2.04)**	-3937.070 (-3.04)**	-2.721 (-2.40)**
Selling price	0.652 (10.99)***	-0.00023 (-1.32)	-3937.070 (-0.03)	-1.595 (-0.90)
R-squared	0.75	0.41	0.46	0.43
R-adjusted	0.71	0.22	0.28	0.25
F-ratio	4.07**	2.18*	2.63*	2.41*

Source: Field survey data, 2006. () t values computed.

***, **, * = Significant at 1 percent, 5 percent and 10 percent, respectively.

Age of the retail marketers has a coefficient that is significant and negative, indicating that marketing profit decreases as age of the marketer increases. This agrees with *a priori* expectations and Nwaru and Iwuji (2005), who reported a negative, although insignificant, relationship between the age and gross margins in plantain marketing in Imo State, Nigeria. Nwaru (2004 and 2005) indicated that entrepreneurship dwindles as the age of the entrepreneur increases. This is because the innovativeness and optimism of the entrepreneur and his mental capacity to cope with the challenges of his business activities and his mental and physical abilities to do manual work decrease with age.

The coefficient of the quantity of bananas handled by a retail marketer was significant at 10 percent and positively related to profit. This is expected and agrees with the report from Nwaru and Iwuji (2005). The quantity of bananas that a marketer handles defines his scale of business operation. *Ceteris paribus*, the higher this scale, the higher the marketing profit because of possible economies of scale. Therefore, policies that could enable the marketers to increase their scale of operations are advocated. This could be achieved amongst others through reorientation programs aimed at changing their capacity for business initiatives, micro credit, and other infrastructural provisioning.

The purchase price of banana has a coefficient that is significant at 5 percent and it is negative. On the other hand, the selling price of bananas per unit has a coefficient that is significant at 5 percent and positive. These are expected. If the purchase price per unit increases, the profit is bound to decrease; this is known as *ceteris paribus*. Conversely, if the price of purchase per unit decreases, the profit is bound to increase; this is known as *ceteris paribus*. Echebiri and Mejeha (2004) had observed that unpredictable fluctuations in the prices of various food products have become a common feature in the nation's economy. A practical implication of this situation is that the consumers of agricultural products pay so much, while the producers receive relatively low prices; a situation that has remained a binding clog to the wheels of agricultural development in Nigeria.

The estimated determinants of profit at the wholesale level were summarized and presented in Table 3. The F-ratio for each estimated function is significant at 1 percent, indicating that each is adequate for use in further analysis. However, based on the R-Squared value, the F-ratio, and the number and signs of significant variables, the semi log functional form was chosen as the lead equation. The model shows that the independent variables accounted for 89 percent of the variation in the wholesale profit. The results indicate that the level of formal education and the purchase price and selling price were the significant determinants of profit. Whereas education and selling price were positively related to profit, purchase price of the bananas was negatively related to it. These results are in conformity with *a priori* expectations. Obasi (2008) observed that better education of the marketers has advantages as it enlightens them on how best to strategize and to adapt to better marketing conditions.

Table 3: Estimated determinants of profit for the wholesalers

Variables	Semi Log	Linear	Double Log	Exponential
Constant	-1029.75 (-0.83)	-3013 (-1.65)	4.75 (4.13)	-7.14 (-0.58)
Age	5.948 (-0.19)	1141.15 (0.86)	-0.034 (-1.19)	-0.511 9-0.57)
Education	84.55 (1.85)*	628.77 (1.58)	0.120 (2.84)**	0.96 (3.59)**
Cost of transportation	-1.196 (-0.51)	-485.35 (-0.14)	-0.001 (-0.46)	-0.492 (-0.21)
Quantity of banana	-2.907 (-0.02)	-996.65 -0.41	0.103 (0.7)	0.583 (0.35)
Purchase price	-0.464 (-2.36)**	-2698.40 (-1.81)*	-0.005 (-2.58)*	-3.109 (-3.09)**
Selling price	0.61 (4.75)***	6212.44 (4.15)***	0.004 (3.67)**	4.57 (4.53)***
R-squared	0.86	0.80	0.77	0.83
R-adjusted	0.89	0.85	0.83	0.87
F-ratio	25.6***	17.7***	15.1**	21.6*

Source: Field survey data, 2006.

() t values computed.

***, **, * = Significant at 1 percent, 5 percent and 10 percent, respectively.

The estimated determinants of the profit function for the whole banana sellers (pooled retailers and wholesalers) were summarized and presented in Table 4. The F-ratio for each form of the estimated profit function is significant at 1 percent. This indicates that each of the functional forms is adequate and could be used for further analysis. However, based on statistical and econometric reasons, the linear functional form was chosen as the lead model. The results that are presented in Table 4 indicate that 52 percent of the variation in the profit of the banana sellers is caused by the variation in the hypothesized variables. However, the age of the sellers, the level of formal education, the quantity of bananas handled per market, and the purchase and selling prices of banana were the statistically significant determinants of the profit from banana sales. Transport cost was insignificant, although it maintained the expected negative sign.

Table 4: Estimated determinants of profit for pooled retailers and wholesalers

Variables	Linear	Exponential	Semi Log	Double Log
Intercept	21.038 (0.03)	5.716 (8.07)***	-16027.000 (-2.24)*	0.329 (0.06)
Age	-41.913 (-1.73)*	-0.040 (-1.91)*	-1488.892 (-1.82)*	-1.343 (-2.04)**
Education	128.220 (2.65)**	0.134 (3.27)***	1186.432 (2.87)**	1.259 (3.79)***
Transportation Cost	-0.370 (-0.26)	-0.0006 (-0.51)	84.387 (0.07)	0.190 (0.18)
Quanty of banana	0.350 (1.69)*	0.067 (0.59)	-83.194 (-0.54)	0.651 (0.52)
Purchase price	-0.321 (-2.51)**	-0.0003 (-2.37)**	-3193.459 (-3.21)***	-2.490 (-3.11)***
Selling price	0.442 (5.07)***	0.0003 (3.60)***	5094.371 (5.19)***	3.179 (4.02)***
R-squared	0.5214	0.4493	0.5192	0.4974
R- squared adjusted	0.4569	0.3751	0.4545	0.4297
F-ratio	8.09***	6.06***	8.02***	7.35***

Source: Field survey data, 2006. () t values computed.

***, **, * = Significant at 1 percent, 5 percent and 10 percent, respectively.

Age of the marketers was significant at 10 percent and negatively signed, as expected. Their level of formal education was significant at 5 percent and positively signed as expected. Education helps to unlock the natural talents and inherent enterprising qualities (Nwaru, 2004) of the marketers; making them more skilled and amenable to risk taking and change than the non-educated people. The quantity of bananas handled per market had a coefficient that is significant ($p=0.5$) and positively signed as expected. The purchase and selling prices of banana were other important statistically significant determinants of the profit from banana sales; each maintained the right *a priori* sign.

A t-test of significant difference between means of revenue, costs, and profit for the wholesalers and retailers was summarized and presented in Table 5. This test indicates that the wholesalers maintained higher mean revenue and cost regimes than the retailers. There was no statistical difference between the mean profit of the wholesalers and retailers. This result is contrary to Obasi (2008) who reported that the retailers of rice in Abia State of Nigeria tend to have higher marketing efficiency than the wholesalers due to the fact that most retailers reduce marketing costs, thus making more profit from a unit of the commodity.

Table 5: Significant difference between means of revenue; costs and profit

Variable	wholesalers		Retailers	
<u>Revenue</u>				
Minimum		8000.00		6000.00
Maximum		19200.00		13000.00
Mean		12273.33		10300.00
Degrees of freedom	58;	t_{computed} -2.258;	$t_{\text{tabulated}}$	2.016
<u>Cost</u>				
Minimum		5600.00		5520.00
Maximum		14750.00		12900.00
Mean		10277.00		8337.33
Degrees of freedom	58;	t_{computed} -2.872;	$t_{\text{tabulated}}$	2.016
<u>Profit</u>				
Minimum		50.00		36.00
Maximum		5300.00		4700.00
Mean		1996.33		2073.87
Degrees of freedom	58;	t_{computed} 0.192;	$t_{\text{tabulated}}$	2.016

Source: Computed from field survey data, 2006.

Summary and conclusion

This study attempted to examine the determinants of profit in banana marketing in Umuahia Agricultural Zone of Abia State, Nigeria. Cross-sectional data collected from a random sample of 60 banana marketers consisting of 30 retailers and 30 wholesalers from one urban and two rural markets were analyzed using simple statistics and the multiple regression technique of the ordinary least squares. Results show that for the retailers, quantity of bananas handled, and the selling price per unit of banana were directly related to profit, while the age of the marketer, and the purchase price per unit were negatively related to it. For the wholesalers, education of the marketers and the selling price per unit were significant and positively related to profit, while quantity of banana handled and the purchase price per unit was negatively related to it. For the pooled data, education, quantity of bananas handled, and selling price per unit were significant and positively related to profit, while age and purchase price per unit were negatively related to it. Age maintained the expected negative sign in all the three estimated models.

It could be concluded from this study that banana marketing is profitable. Therefore, it could serve as a source of income and employment for the marketers. Moreover, there is no significant difference in the profit of the wholesale and retail marketers. Thus, the policy efforts to eliminate the constraints to banana marketing would be rewarding. Such policies should enable the marketers to acquire more education through adult education, seminars, workshops, etc. and should be targeted more at the younger marketers. This should enable them to increase the quantity of bananas that they handle.

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Socio-economic Determinants of Banana and Plantain Output The relationship between the socio-economic variables and banana output (P1) and plantain output (P2) using the Double log model were generally weak with $R^2 = 44.91\%$ and $R^2 = 51.22\%$ respectively. However, age of farmer, educational attainment and family size were negatively related to the output of banana while farmers' experience, age of banana crop, extension access and farm size were positively related. In the case of plantain production, all the Socio-economic variables were positively related to plantain output. Farm size has a direct relationship with farm output and by implication farm profit in both enterprises. The implication of this finding is that, the output. 28. The studies aimed at estimating gross margin and marketing efficiency as well as isolate the factors that determine marketing margin of yam in Abia State. Data for the study were obtained from the response of 64 yam traders using a structured questionnaire and multi stage sampling technique. Data were analyzed using simple descriptive statistics, gross margin and ordinary least square multiple regression estimate. There was a long marketing link of greater than 3 channels with mean marketing margin of 50% in the distribution of yam in the State. The Cobb Douglas model performed best, with cost

There are three agricultural zones in Abia State: Aba, Umuahia and Bende. In the Aba and Umuahia agricultural zones, such cash crops as palm produce, cocoa and rubber are produced, while food crops such as yam, cassava, rice, plantain, banana, maize and cocoyam are produced in large quantities. The Bende agricultural zone is a major producer of rice and yam. Fishing is also carried out by people who live along the Imo River. Large areas of forest can be found in all the Local Government Areas. They provide raw materials for the pulp and paper industry. It is the policy of the Abia State Go