



Characteristics and Potentials of Retail Marketing of Yam in Delta State, Nigeria: Implications for the Extension Services

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Authors' contributions

This work was carried out in collaboration by both authors. Author DUOO designed the study, wrote the protocol and wrote the first draft of the manuscript. Author GFO performed the statistical analysis of the study. Both authors managed literature searches, read and approved the final manuscript.

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ABSTRACT

The study was carried out to assess the influence of socio-economic characteristics on retail yam marketing in Delta region of Nigeria and the implications on the potential market growth of yam extension services. Data were obtained from the marketers with the use of structured questionnaires. Descriptive statistics (frequency distribution table, percentages and means) was used to analyze the socio-economic characteristics and constraints of marketers, while multiple regression was used to analyze the hypothesis of the study. Findings of the study show that the retail yam market is completely dominated by females. Most of them (71%) were married and attended primary school (65%). The age of most (35%) of the marketers was between the range of 40 – 49 years. Results also show that all the respondents are into full time retail marketing of yam and most (85%) of them market only yam tubers with an average of 5-9 years experience in the

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trade. The average total marketing cost, weekly revenue and gross margin of retail yam marketing were \$43.09, \$63.44 and \$20.34 respectively thus indicating that the trade is profitable. Serious constraints faced by the traders are perishability (3.83), inadequate capital (3.71), transport and its related problems (3.70), seasonality (3.64) and absence of locked-up stalls (3.58). Multiple regression analysis reveals that marital status ($b = -0.281$) and years of marketing experience ($b = -0.257$) were significant to the marketing cost of yam. Based on findings, the study recommends that efforts should be made by the State Government through Extension Service to organize the retail marketers into cooperatives as this would help them take advantage of economies of scale in engaging in bulk buying and transportation therefore saving money for themselves.

Keywords: Characteristics and potential; retail yam marketing; agricultural development programme; small-scale farmers; yam production; micro-sett techniques; plastic mulch; population explosion; religious heritage.

1. INTRODUCTION

Agriculture belongs to the real sector of Nigerian economy and it is characterized by multitude of small-scale farmers scattered over wide expanse of land area, with small holdings ranging from 0.05 – 3.0 hectares per farm land, rudimentary farm systems, low capitalization and low yield per hectare [1].

Over the years, successive governments in Nigeria have encourage yam crop production through the supply of seed yam, agro-chemicals like fertilizer, insecticides and herbicides [2]. This practice of the government seems to have yielded no dividends as the price of yam has continued to sky-rocket, especially during off-season. Iheanacho and Mshelia [3], this problem of high price is blamed on the middlemen who perform the role of marketing. They also attributed the high price to fluctuation in supply and demand. They further emphasized that the law of supply and demand to a good extent determines the [rice of the commodity (yam)]. Nigeria is noted to be a leading World producer of yam [4]. The report noted that out of the World production of over 30 million tonnes per annum, Nigeria produces about 25 million tones. FAO [5] reported that there has been steady increase in yam production from 19,305 tonnes in 1992 to 26,633 tonnes in 2001. Even with the increase, the production seems not to be meeting up with demand not only because of population explosion but also because the production is in the hands of small-scale farmers [1].

Yam crop (*Dioscorea spp*) is recognized as one of the major tuberous food crops and it is one of the staple foods of the people of the tropics [6]. They noted that, nutritionally, yam is a better tuber when compared to cassava. This is because it contains a higher percentage

of protein and vitamin C. Nwasike [7], noted that yam is the second most important tuber and root crop as well as the second best commercially selling crop. Religiously, [8] identified yam crop as part of religious heritage in that it is presented in marriage ceremonies and burial rites.

Agronomically, yam can be grown from whole tuber, seed yam or micro-sett [9]. The report [9] showed that use of micro-sett (small pieces of yam cut from “mother seed yams”) under plastic mulch could increase the multiplication rate ten-fold over conventional system. Okwuokenye and Onemolease [10] noted that on the part of profitability that yam production is very profitable and that more marketers can still enter the market and still make profit.

Marketing generally entails the movement of goods (agricultural products) from on producer to the final consumer, a route that is often linked with middlemen of which the retailer is one [11]. Retail marketing involves buying in smaller quantities from the wholesalers and selling in units to the final consumers [12]. He asserted that the retailer’s sales volume comes primarily from wholesalers. Retail marketing of most agricultural crops like yam is carried out in open spaces and lack basic infrastructure (concrete floor, drainage and facilities for sorting, weighing and handling of produce) [13]. To improve on the retail marketing of yam would demand an understanding of the marketing function and cost. Olayemi [1] asserted that whatever affects marketing functions and cost will ultimately affect the agricultural development process and socio-economic wellbeing of the citizenry. This is because too high a cost will limit customer’s ability to buy and this will eventually limit agricultural production (yam inclusive).

Despite the benefits derived from yam production, it is realized that it has earned little attention from scientific research compared to other food crops. This situation has not only affected the production but also the marketing of yam [14]. This study therefore seeks to bridge the gap so that a drastic increase in production and retail marketing of the product can be achieved.

2. RESEARCH OBJECTIVES AND HYPOTHESIS DEVELOPMENT

While the main objective of the study is to assess the characteristics and potentials of retail marketing of yam in Delta State, Nigeria and its implications for the Extension Services, the specific objectives include;

- i) To provide a socio-economic description of retail yam marketers in Delta State.
- ii) Determine the marketing cost and gross margin associated with retail marketing of yam in Delta State.
- iii) Analyze the socio-economic factors associated with economic returns in retail yam marketing.
- iv) Analyze the problems militating against retail yam marketing in Delta State.

A null hypothesis formulated for the study is that marketers' personal characteristics are not significantly related to their income level.

3. RESEARCH METHODOLOGY

The study was limited in scope to Ika north east and Ika south LGAs of Delta State. The purposive sampling of these LGAs was informed by the knowledge that they constitute the major areas where yams are mostly cultivated and sold in the state. The second stage of the sampling involved the random selection of 5 major markets in each of the LGAs. The selected markets were Akumazi, Umunede, Owa-aliro, Ekwuoma and Igbodo markets, all in Ika north east LGA. While those selected from Ika south were Baleke, Abovo (Oyoko), Alihagu, Oki and Agbor-Obi markets. A systematic random sampling was then done to select eight (8) retail marketers in each market. Samples were selected from the area of study and from the selected markets because yams are majorly produced and sold in the areas. In all a total of 80 respondents were interviewed for the study.

The data collection instrument consists of a structured interview schedule pre-test on retail

yam marketers not sampled for the study. Analysis of data was accomplished through frequency tables, gross margin analysis and multiple regression. The functional form of the regression equation is explicitly stated below:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3, \dots, b_nX_n + e$$

Where the parameters in the model are defined as follows:

- Y = Income from retail marketing [\\$]
- X₁ = Marketing experience (measure) in years spent in retail yam marketing
- X₂ = Age (years)
- X₃ = Educational level
- X₄ = Marital status (dummy: single =1; married = 0)
- E = error term

The significance of the parameters was determined using t-test, the significance of the model was evaluated by the F-value while the collective influence of the independent variables was determined by the adjusted R² value.

4. RESULTS AND DISCUSSION

4.1 Socio-economic Characteristics of the Respondents

Socio-economic description of retail yam marketers revealed that the retail yam marketers were all females (100%), mostly married (71.3%) and most (65%) were not educated beyond the primary school level. They are about 44 years old in average and engage in yam marketing on full time basis. Apart from yam, few of them 15% also market other crops, and this they have been for almost 9 years.

The result suggests that retail marketing of yam is a predominant female activity. This is possible because of the low capital needed to execute the trade which may not be too difficult for women to access, possibly the low profitability level and the intricacies involved in the process which a typical African man perhaps would not be able to stand [15]. The low educational qualification of the respondents suggests that a high formal education is not necessary to be able to execute this business and this may be adduced to the low capital required in executing the trade. The low mental task required to carry out the trade may also be responsible for the low educational level of the respondents. The marketing experience (average = 9 years) suggests that the respondents were experienced in the marketing

of yam. The predominance of married individuals in retail yam marketing implies their need to support their families as a possible factor in marketing yam.

retail marketing of yam in the study area. However, it also reveals that some of the respondents did make financial losses in the yam trade.

4.2 Marketing Cost and Income of Respondents

The weekly marketing cost, returns and gross margin shows that the total marketing cost incurred by the average respondents ranged from \$33.44 to \$67.81 with an average of \$43.09. The weekly revenue for the marketers averages \$63.44 with the minimum and maximum earnings being \$18.75 and \$81.25 respectively. Gross margin analysis indicates an average of \$20.34 per marketer with a loss of \$16.56 and a gain of \$47.81 being the minimum and maximum respectively. The results indicate the economic profitability of

4.3 Marketing Constraints Faced by Respondents

Marketing problems faced by the respondents are presented.

Perishability due to poor storage (3.83), inadequate capital (3.71) and transportation (3.70) were identified as some of the serious problems facing retail yam marketing in the study areas. Other serious problems were seasonality of the (3.64) and absence of locked-up stalls (3.58). Other factors such as retail yam market inaccessibility (3.23) and theft (2.53) were not considered serious by the respondents.

Table 1. Demographic characteristics of yam marketers (n = 80)

Variables	Frequency	Percentage (%)	Mean
Sex			
Female	80	100	
Male	-	-	
Marital status			
Single	8	10.0	
Married	57	71.3	
Divorced	12	15.0	
Widow	3	3.8	
Level of educ.			
Did not attend sch.	13	16.3	
Primary sch.	52	65.0	
Secondary sch.	11	13.8	
NCE/OND	4	5.0	
Age			
<30 years	7	8.8	
30 – 39	26	32.5	
40 – 49	28	35.0	
50 – 59	10	12.5	
60 and above	9	11.3	43.5
Marketing status			
Full time marketing	80	100	
Part time	-	-	
Crops marketed			
Yam only	68	85.0	
Yam & other crops	12	15.0	
Years of marketing			
<5 years	11	13.8	
5 – 9	42	52.5	
10 – 14	18	22.5	
15-19	8	10.0	
20 and above	1	1.3	8.7

Source: Field survey data

Table 2. Marketing cost and income of respondents

Variables	Minimum	Maximum	Sum	Mean	Standard deviation
Total marketing cost (\$)	\$33.44	\$67.81	\$3447.5	\$43.09	1963.97
Weekly revenue (\$)	\$18.75	\$81.25	\$5075	\$63.44	2333.57
Gross margin (\$)	\$16.56	\$47.81	\$1627.5	\$20.34	2167.65

Source: Field survey data

Table 3. Marketing constraints of respondents

Constraints	Mean score	Std. deviation	Rank
Perishability due to poor storage	3.83*	0.84	1
Inadequate capital	3.71*	0.93	2
Transport and its related problems	3.70*	1.10	3
Seasonality	3.64*	1.30	4
Lack of locked-up stalls	3.58*	1.52	5
Market inaccessibility	3.23	1.76	6
Theft	2.53	2.32	7

*Serious (mean>3.50); Source: Field survey data

The results showing perishability of yam tubers and inadequate capital to be a serious problem support the findings of [16]. They noted that capital is an important marketing input required for essentially all other marketing functions such as produce purchase, transport expenses and packaging. Malcom [17] findings further support perishability of agricultural produce as one of the major sources of post harvest food losses. Transportation as a factor that contributes to high cost was identified by [18] as a major problem plaguing the marketing of agricultural products. He further noted that this will raise marketing cost and reduce profit margin. The absence of locked-up stalls which was noted as a serious problem was supported by the assertions of [13].

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4.4 Hypothesis: Marketers Personal Characteristics are not Significantly Related to Their Income Level

Multiple regression analysis was used to show the relationship between respondents' characteristics and marketing cost (see Table 4).

From results, computed F – value is 13.43 and it shows that the regression is significant at the 1% level ($p < 0.01$). Explanatory variables used for the study explained about 51% variation in marketing cost (adjusted $R^2 = 0.517$). Out of the four explanatory variables, two of them, namely, marital status ($b = -0.281$) and years of marketing experience ($b = -0.257$) showed to have a significant negative effect on marketing cost of retail yam marketing.

The negative coefficient ($b = -0.281$) for marital status indicate that married respondents are more likely to incur less expenses on marketing cost than the single marketers. The reason is that married respondents have larger households who may in one way or the other help in carrying out some of the marketing functions like transportation, loading and off-loading as well as sorting of products. Through the household assistance, cost is lowered while profit margin is increased.

The results also show a negative coefficient for marketing experience ($b = -0.257$). This implies that respondents with longer marketing experience expend significantly lower cost of marketing than those with less number of years

or new entrants into the trade. The most possible reason adduced for this is that those marketers with more experience tend to be more knowledgeable on the retail yam activities and so know how to cut down on cost and therefore increase profit margin. A high level of marketing experience will also help the marketers to know most of the difficulties to anticipate and how to either reduce their effects or guild against such. By so doing their profit margin is enhanced. A high level of marketing experience will also enable the marketers to develop personal relationship with some of the people they buy yam tubers from. Such relationship would help the marketers on how to get the tubers at relative cheaper prices and through this have profit margin increased. This finding agrees with that of [15]. They [15] noted that marketer's profit margin is high for those with longer marketing experience.

Table 4. Relationship between respondents' characteristics and marketing cost

Explanatory variables	Standardized coefficients (b)
Constant	87.18 (7.397)
Marital status	-0.281(2.717)*
Level of education	0.080 (0.710)
Age	-0.166 (1.470)
Years of marketing	-0.257 (2.645)*
F – value	13.43**
Adjusted R ²	0.517
Standard error	19.47

*Significant (p,0.05); **Significant (p,0.01); Values in parenthesis are computed t values; Source: Field survey data

4.5 Implications for Extension Services

The introduction of marketing into the production process is essential for agricultural development to take place [18]. The author assumes that a better marketing of the agricultural products (yam) can be better done through Extension Service by simply carrying an indebt sensitization of the marketers on how to organize their marketing activities. To this end in view, Extension Service should help to encourage and promote an efficient retail marketing of yam. It is believed that it would help increase income earned from marketing and consequently promote living standards of the people. This can be achieved through Extension Service organizing the traders into cooperatives. Through the cooperative societies retail yam marketers

can make bulk purchases and together transport their goods, thereby making much more profit.

Perishability due to poor storage was identified as one of the major problems plaguing retail yam marketing. It therefore becomes necessary for Agricultural Development Programme (ADP) through the Extension Service unit to introduce better storage technology. It is hoped that this will help ameliorate the problem.

In addition there is need to organize the marketers into market unions. The unions will first make the marketers to be looked at by the Government in particular and the public in general as organized people with a good mission. Through the same union the marketers can be reached when the need arises. Through the same union, the traders can mount pressure on the Government to help them with the provision of locked-up stalls. This is necessary because absence of locked-up stalls was identified as one of their marketing problems through which breakage of yams occur resulting to spoilage. It is assumed that the locked-up stalls will help the marketers to save money that would have been spent on daily carrying of yam tubers. Money will also be saved from spoilage that would have evolved from breakage

Another benefit that could be derived from organizing the traders into union is that the transport and handling price of the tubers of yam bought by them (traders) could be reduced through economies of scale by lowering per unit transport and handling costs, thereby increasing the marketers' profit.

5. CONCLUSION AND RECOMMENDATIONS

The findings of this study have shown that the retail marketing of tam crop is influenced by the marketers' socio-economic characteristics. The results also show that retail yam marketing in the study area is profitable and mostly affected by respondents' marital status and years of experience in the trade. The study also found that retail yam marketing is constraint by factors like spoilage of yam tubers, inadequate capital, transportation and its associated problems and absence of locked-up stalls in the market.

Based on the results of the study, it is recommended that:

- The Delta State Government should make policies that would help improve on the retail marketing of yam. Such policies should focus on these socio-economic characteristics found to affect the profitability of retail yam trade.
 - In addition, the State Government should provide locked-up stalls for the traders. This will help guide against destruction of yams that are likely to arise from up and down carrying of the tubers.
 - There is also a need for the State Government to provide better road networks. This will ensure easy transportation of products, and through this cost will be lowered while profit margin will be increased
 - The marketers need to be organized into cooperatives. Through this, the marketers can have access to credits and better training from the Extension service of the State's ADP on how to preserve their yam tubers against spoilage.
 - Through the cooperative societies, the marketers can pull their resources together and take advantage of economies of scale in carrying out marketing functions like transportation, loading and off-loading are concerned.
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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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