# ECONOMIC ANALYSIS OF SESAME VALUE CHAIN ACTORS IN THE FEDERAL CAPITAL TERRITORY, ABUJA, NIGERIA

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**ABSTRACT**

*This study examined the economic analysis* of sesame value chain actors *marketing in the Federal Capital Territory, Abuja, Nigeria. The aims were to describe the socio-economic characteristics of sesame producers and marketers, analyse sesame marketing margin, determine sesame marketing profitability, analyse sesame marketing efficiency, determine factors influencing sesame marketing and determine the major constraints of sesame marketing in the study area. Two hundred and forty respondents comprising 40 producers, 20 licensed buying agents, 80 rural buyers, 40 wholesalers and 60 retailers from four markets (Abaji, Yaba, Kwali and Kwaita) were interviewed through the use of a structured questionnaire. Descriptive and Inferential Statistics were used to analyse the data collected. The results of the study revealed that majority (80%) and (83%) of the producers and marketers were within the ages of 21 – 40 years respectively. The retailers had the highest marketing margin of 12.04%, as against licensed buying agents, rural buyers and wholesalers with 7.60%, 10.09% and 11.76% respectively. The analysis further revealed that the retailers were the most efficient with 265% efficiency value. The results of the regression analysis also revealed age, gender, transportation cost, income, labour cost, market tax and storage cost significantly influencing sesame marketing in the study area. Transportation cost, market tax, lack of experience and cost of purchased were the major problems militating against sesame marketing. Based on these findings, it was concluded that, the sesame market is well organized and that sesame marketing is a profitable venture and potential employment source. It was therefore recommended that extension education should be stepped up in the area to raise the marketers' awareness, improvement of infrastructures in the rural area, innovating term work and enforcing guarantee minimum price of sesame in the area.*

**KEYWORDS:** Producers, sesame, efficiency, marketers, value chain

## INTRODUCTION

Sesame (Sesamum indicum, L) is an oil seed crop grown mainly for its seeds that contain approximately 50% oil, 25% protein and 25% carbohydrate and mineral elements. According to Ashri (1989), sesame is adaptable to many soil types but it thrives best on well drained sandy soil of medium texture. It is drought tolerant due in part to an extensive root system. It requires minimum rainfall of 43 - 44mm and day time temperature of 35-37oC for optimum growth (Weiss, 1983). The presence of antioxidants (Sesanum, sesiamolin and Sesanol) makes the oil to be one of the most stable vegetable oils in the world. Sesame is an important component of Nigeria's agricultural export; the crop currently ranks second to cocoa in terms of export volume in Nigeria. Sesame has a large potential to enhance agribusiness development and generate employment opportunities that will lead to significant impact in the rural sector, particularly for households in North central Nigeria and Abuja. About 70% of sesame produced in Nigeria is exported (USAID, 2010). Also in 2010, Raw Materials Research and Development Council (RMRDC, 2010) survey revealed that Sesame product has high economic potentials in Nigeria for both industrial and export markets. Sesame is major export crop of Nigeria in recent time and attracts foreign direct investment for the purpose of export. Annual exports of sesame from Nigeria are valued at about US$35 million from an estimated world trade of $600 million in 2005. Globally, Nigeria ranks second to Sudan in production and export of sesame with a world market share of 4% equivalent to N12.8billion and exporting about 1,700 metric tonnes to Europe and 22,000 metric tonnes to Japan (NEPC,2010). However, in 2015 Nigeria realised an estimated value of ₦21,781,746,959.00 from export of sesame (National Bureau of Statistics, 2015). Hence, farmers in all the agro-ecological zones of the country are being encouraged to produce the crop. In view of the yield potentials of the varieties released to farmers, the country has the technology to produce major output of sesame for export (National Cereals Research Institute 2012). It is an established fact that sesame production has provides employment for more than 80 percent of the inhabitants in the study area as a result of the activities that take place along the distribution chains from cultivation to consumption (production, its processing and marketing) which indicates the potentials of the crop in uplifting the living standard of all the actors along the production chain, but its production in the study area is on the decline and the demand for the commodity is growing strongly in all the major consuming countries over the past decade as at least 20 countries are importing more than 7000 tonnes per year having risen to 427,000 tonnes per year in 2000 (FAO, 2006).

Report by Alibaba (2013) reveals that the prices of sesame have also been on the increase, from ₦41,500 per tonne to ₦164,500 per tonne from 2000 to 2012. Despite these favourable trends in the global production and marketing of sesame, the production, processing and marketing activities of sesame in the study area is on the decline. Promoting economic growth in a society necessitate exchange of goods and services, when people in a society are becoming specialized in their economic activities, there is need to rely upon other to supply some of the products they needed to stimulate their production and immediate marketing necessities. This results in exchange between the buyers and the sellers; which makes the parties intimate (Kotler and Keller, 2008). Sesame marketing constitutes the most important source of income to a wide range of rural farmers in recent time. Sesame product is marketed globally hence it has the potential to alleviate poverty among producers, traders, processors, consumers and the entire Nigeria economy (FAO, 1996). The flow of sesame products from the farmers to the end users (consumers) is facilitate through institutions and price making mechanisms that guide those flows (Robert, 2012). However, Middlemen play very eminent roles in the marketing of sesame products. Through them, place time, form and possession gaps that deny the consumers these utilities are overcome (Kotler and Keller, 2008). By the nature of their frequent and extensive contact, and scale of operations, they are better equipped to offer farmers or firms more than they can do themselves, more so, they are better position to finance, move, store commodities and disseminate marketing information. The cost is incurred mainly in adding utilities of possession, place, form and time (Achoga and Nwagbo, 2004). Based on these critical roles the sesame marketing participants play and their potentials in reviving the Nigeria foreign trade earning and improving the income of our local agro-based business enterprises, this study is designed to focus on the marketing system of sesame in the Federal Capital Territory Abuja, Nigeria.

The role of the market participants (farmers, middlemen and consumers) is yet to be fully investigated and documented in the study area. Sesame is marketed mostly in its primary form. The oil extracted by traditional methods and the cakes resulting from the process are used mainly for local consumption. These processed products are yet to be produced in significant commercial quantities. The analysis of the market economic activities like the marketing margin, efficiency and profitability in the study area will show the efficiency or otherwise of the marketing system. Utilizing this information could be one of the bases for improving the performance of the marketing system and enhancing production and incomes of farmers. As a result of aforementioned, this study was conceived to examine the economic analysis of sesame value chain actors in the Federal Capital Territory, Abuja, Nigeria, hence the following objectives which are to:

i. describe the socio-economic characteristics of sesame marketing intermediaries in the area;

ii. estimate costs and returns associated with sesame marketing;

iii. analyse the sesame marketing margin;

iv. analyse the efficiency of sesame marketing;

v. determine the factors influencing sesame marketing efficiency, and

vi. identify the major constraints associated with sesame marketing.

## METHODOLOGY

### The Study Area

This study is conducted in Federal Capital Territory (FCT), Abuja. It is located between Latitude $7^0$ 25´ and $9^0$ 20´ North of the equator and Longitude $5^0$ 45´ and $7^0$ 39´ East coast of Greenwich meridian with a land mass of 7,315 square kilometres (NIPOST, 2009). It has an annual rainfall which ranges from 1100mm – 1600mm, average monthly temperature ranges of 23°C to 34°C and derived savanna vegetation zone which consists of short grasses, shrubs and trees (FCT AGIS, 2008). FCT accommodate population of about 1,405,201 inhabitants (NPC, 2006) and projected population of 5,000,000 inhabitants (NPC, 2013) using the growth rate of 2.47%. Abuja presently comprises of six area councils (Abaji, Kwali, Kuji, Gwagwalada, Bwari and Municipal). Also Abuja shares common boundaries to the North east with Kaduna State, to the south east Nasarawa State, to the south west with Kogi State and to the North with Niger State. The major food crops include: yam, sesame, maize, guinea corn, beans and millet. Fishing activities are also prominent among the Bassa people and villagers. Besides farming, wood and craft work was and still a notable occupation of the people of the territory especially the Gbagyis.

### Sampling Procedures and Sample Size

Multi-stage sampling technique was used to obtain respondents for this research. In the first stage, Abaji and Kwali were purposively selected because of the concentration of sesame growers and market in the area. In the second stage, stratification of 200 marketers and 40 producers were obtained. This consist of a random selection of 2 markets each from the two area councils namely Abaji and Yaba market in Abaji area council, as well as Kqali and Kwaita market in Kwali area council. In the third stage random selection of 20 rural buyers, 5 licenced buying agents, 10 wholesalers, 15 retailers and 10 producers each from the four markets centres, which make up 120 respondents from each of the two area councils with the assistance of market leaders and community leaders. A total of two hundred and forty (240) respondents were sampled. Primary data were obtained from the respondents with the aid of structured questionnaire complemented with an interviewed schedule. Data collected were analyzed with descriptive and inferential statistics.

### Model Specification

The farm budgeting tool is widely used in farm management and production economics studies. The farm budgeting tool is an operation leading to the determination of cost and revenue for a given production period (Olukosi and Erhabor (2005). The farm budget tool was employed for each farmer to determine the net farm income (NFI) per hectare. Comparison was made between costs incurred and returns obtained by each farmer. Profit is made when

returns are greater than costs, while loss occurs when reverse is the case. According to Olukosi and Erhabor (2005), NFI is expressed as

NFI = GI – TVC – TFC ----------(1)

Where;

NFI = Net Farm Income (₦).

GI = Gross Income (Total Revenue) (₦).

TVC = Total Variable Cost (₦), and

TFC= Total Fixed Cost (₦).

Marketing margin

Marketing margin for a particular commodity is the difference between what the consumer pays for the final product and the amount the producer receives (Arene, 2003). At each intermediary level, it is the difference between price received on resale and the purchase price (Mejeha *et al.,* 2000). According to Olukosi *et al.,*(2005) a larger variation between the marketing margins of participant indicates a wide price variation along the chain while a participant with higher marketing margin, is said to have a larger share of the marketing benefits.

Marketing margins were computed using the models below:

MM (₦) = CP – FP

Expressed as percentage of consumer or retail price

Where;

MM =Marketing margin

CP = Consumer or retail price (₦)

FP = Farmers price (₦)

The marketing margin model stated mathematically below was employed to estimate marketing margins of licensed buying agents, rural buyers, wholesalers and retailers.

MM (₦) = SP –PP

This is expressed as percentage of selling price as:

$$MM\ (\%) = \frac{SP-PP}{SP} \times 100$$

Where;

MM = Marketing margin

SP = Selling price (₦)

PP = Purchase price (₦)

Source: (Olukosi *et al.,* 2005)

Marketing efficiency

Marketing efficiency analysis was used to determine the performance of sesame marketers which is objective (iv). The marketing efficiency result will show whether the activities of the marketers are efficient or inefficient. In its computation, it is maximization of output ratio to input. The marketing inputs are those costs incurred during the marketing of sesame product; these include transport cost, commission, taxes, labour use, bagging and storage expenses. Output on the other hand are those values added to the commodity from producer to the end users. The formula for calculating marketing efficiency as adopted from Olukosi *et al.,* (2005), is as presented in equation

$$ME = \frac{\text{Value added by marketing}}{\text{Cost of marketing service}} \times 100$$

The value added by sesame marketing was obtained using the formula:

VA = SP – PP

Where;

VA = Value added

SP = Selling price

PP = Purchase price

Multiple Regression Analysis

Multiple Regression Analysis was used to achieve objective five (v) which focuses on factors influencing the marketing efficiency of sesame marketers. Regression is the general process of predicting one variable from another by statistical means using previous data (Levin, 1984).

Mathematically the model for this study is specified in general form as:

$Y = F (X_1, X_2, X_3, X_4, X_5 X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13})$ ----------(5)

Where;

Y = Dependent variable (%) (defined as the ratio of value added by marketing divided by cost of marketing services multiplied by 100)

$X_{1=}$ Labour (₦).

$X_{2=}$ Age of marketer (years)

$X_{3=}$ Transportation costs (₦)

$X_{4=}$ Storage costs (₦)

$X_{5=}$ Cost of purchased (₦)

$X_{6=}$ Marketing experience (Years)

$X_{7=}$ Local market tax (₦)

$X_{8=}$ Educational level (Years spent in School)

$X_{9=}$ Credit access (Amount in ₦)

$X_{10=}$ Membership of Association;

$X_{11=}$ Gender (male =1, female =0);

$X_{12=}$ Access to extension or business advisory services (Yes =1, No =0) and

$X_{13=}$ Income (₦).

The functional forms of the model estimated are specified as follows

Linear Function

$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + b_{11}X_{11} + b_{12}X_{12} + b_{13}X_{13} + e$ ----------(6)

Semi – log Function

$Y = a + b_1\log X_1 + b_2\log X_2 + b_3\log X_3 + b_4\log X_4 + b_5\log X_5 + b_6\log X_6 + b_7\log X_7 + b_8\log X_8 + b_9\log X_9 + b_{10}\log X_{10} + b_{11}\log X_{11} + b_{12}\log X_{12} + b_{13}\log X_{13} + e$ ----(7)

Quadratic Function

$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + b_{11}X_{11} + b_{12}X_{12} + b_{13}X_{13} + e$----------(8)

Cobb-Douglas model

$\text{Log}Y = \log a + b_1\log X_1 + b_2\log X_2 + b_3\log X_3 + b_4\log X_4 + b_5\log X_5 + b_6\log X_6 + b_7\log X_7 + b_8\log X_8 + b_9\log X_9 + b_{10}\log X_{10} + b_{11}\log X_{11} + b_{12}\log X_{12} + b_{13}\log X_{13} + e$ ----------(9)

Where;

a = intercept

$b_1 – b_{13}$ = regression coefficients estimated

e = Error term

Perception index

The objective six (vi) which centers on the severity of the constraint faced by the sesame marketers and was analyzed using perception index. The marketer's perception of the severity of the constraints faced was assessed by asking them to rate in qualitative terms their perception using a 5-piont Likert Scale. Level of severity of the identified constraint are represented by Strongly Disagree (SD) = 1, Disagree (D) = 2, Undecided (U) = 3, Agree (A) = 4, and Strongly Agree (SA) = 5. The decision rule is that any constraint with computed weighted mean score value of equal to or greater than 3.0 was regarded as a severe constraint while any weighted mean score value of less than 3.0 was regarded as not severe.

RESULTS AND DISCUSSION

Socio-economic characteristics of sesame value chain actors

The result in Table 1 showed that the average age of sesame value actors was 37 years and 86.25% of the marketers within the economic active age of between 21 – 40 years. This implies that sesame marketing in the study area was actively carried out by young people. This agrees with the findings of Oladimeji *et al.*, (2014b) and Ojo and Ojo (2014) that most farmers are within their active years and can make positive contribution to agricultural production. More so, majority (65.42%) of the respondents were male and married, respectively, implying that sesame marketing is dominated by men in the study area. High involvement of men could be due to the importance of the sesame sector in the economy of the household in this area, the findings are in line with the findings of Tiamiyu *et al.* (2013) who reported that sesame farming was dominated by men. In terms of educational level of the respondents,

majority (65.42%) of the respondents had one form of formal education or the other from primary to tertiary education. Higher level of education among the marketers will Increase the ability to read and write enhances the marketer's capability to scan for market opportunities and capacity to manage and utilize resources effectively for higher returns.

The most (55.42%) of the respondents had household size ranging from 6 – 10 persons, there is an indication that the culture of maintaining a large household is still exists among the sesame marketers in the area. Although it holds a huge promise for labour in the enterprise, it also has strange implication in terms of pressure on household income. This agrees with the finding of Fu *et al.* (2011) in Niger State that household status had positive influence on agricultural marketing. In terms of experience, majority (94.16%) of the cattle marketers had been in sesame marketing business for five years with mean of 11 years. By implication, the marketers seem to have wealth of experience which probably played a role in the sustenance of their capacity in the enterprises. This finding corroborates that of Nwaru (2004) who opined that experience is best teacher, years of experience is a valuable asset in decision making because experience will enable them to overcome the constraints faced in sesame marketing. The analysis further shows that majority (95.83%) of the respondents were members of cooperatives indicating that they are likely to benefit from marketing of produce at less cost. Fadel (2012) found that cooperative membership help members maximize marketing output.

Marketing channels of sesame value chain actors

Figure 1 shows the channels of sesame marketing in the FCT. Abuja, Nigeria. It will be observed in Figure 1 that most of the market participants buy their produce directly from the farmers. Only the Licensed Buying Agents who had easy access and are agents of the exporting companies rely on the supply from the rural buyers and the wholesalers. They do not buy do not buy directly from the farmers. However, the retailers depend on the supply from the farmers with little supply from the wholesalers. The exporting companies set prices for the Licensed Buying Agents, the Licensed Buying agents in turn send the rural buyers to purchase the products on agreed prices which are usually less than the prices set by the exporting companies, directly from the sesame farmers. Piya (2001) observed that price setting depends on demand and supply of vegetables in the market as well as the distance that separates the place of production and the place of sale. Adepetu (2010) also found in his study that generally, the price of tomato varies considerably, not only seasonally, but every day and every hour due largely to the uncertainties of demand and supply.

Marketing Costs and Returns of Sesame Value Chain Actors in the Study Area

The costs and returns analysis obtained from the budgetary model shows the profitability of an enterprise. The model measures the returns to marketer's labour, capital, management and other marketing services deployed in the course of sesame marketing. The result also shows that sesame marketing is profitable in the study area in that any input used generated appreciable output which is the sole expectation of any business investment. The costs and returns profiles of the market participants under the study as detailed in Table 2 show that the total cost incurred in sesame marketing varied from an average of ₦160,000/ton for the Rural Buyers and retailers to ₦ 188,269.23/ton for Licenced Buying Agents. The total variable costs accounted for over 99% of the total cost for all the market participants. The average net income accruable to the sesame marketers shows a range of between ₦7,965/ton for the Licensed Buying Agents and ₦13,638.52/ton for the Retailers. However, the return on investment of 1.04, 1.06, 1.07 and 1.08 was obtained for Licensed Buying Agents, rural buyers, Wholesalers and retailers, respectively. This signifies that for every ₦1 spent on sesame marketing ₦1.04, ₦1.06, ₦1.07 and ₦1.08 was realized as profit for Licensed Buying Agents, rural buyers, Wholesalers and retailers, the return per naira invested was higher for the retailer 1.08 compared to 1.04 recorded by the Licensed Buying Agents indicating that sesame marketing in the study area is profitable. The result is in agreement with the finding of Obasi *et al*., (2012) in Abia State, Nigeria, which revealed that the market studied was highly profitable having a monthly profit of ₦71,928.

Marketing Margin of Sesame Value Chain Actors

The marketing margin of the participants and producer shares are presented in Table 3. The purchase cost of sesame ranged from an average of ₦160,000/ton for the rural buyers and the retailers to ₦188,269.23/ton in the hands of the Licensed Buying

Agents. This result is expected given that the Licensed Buying Agents had to pass through numerous intermediaries before making their purchase. Similarly, the selling price followed the same pattern, ranging from ₦177,960.53/ton for the rural buyers to ₦203,761.54/ton for the Licensed Buying Agents. The Licensed Buying Agents sell at higher price, given the enormity of value addition through the sesame marketing channel. The retailers received the largest share of the margin of about 12.04% compared to the 7.60% received by the Licensed Buying Agents, given the lower magnitude of sales and unrestricted price structure, compared to the Licensed Buying Agents and Rural Buyers who operated on agreed prices. The results further reveal that the other marketing participants aside, the producer will receive 92.4% of the marketing share under the Rural Buyers. While for the retailers, the sesame farmers receive 87.96% of the market share. Also, the result revealed that the retailers received the largest share of the marketing margin. This is a clear indication of the group being able to make use of the little resources at their disposal to maximize output in sesame marketing. Also, the retailers are the closest group to end users who purchase the product for satisfaction rather than profit motive. The Licensed Buying Agents, Rural Buyers and wholesalers are restricted by price set by the exporting companies hence their marketing margin is lower per sale. Olukosi *et al.* (2005) stated that the higher the marketing margin, the more efficient is the marketing system.

Marketing Efficiency of Sesame Value Chain Actors

The marketing efficiency measures was deployed under this study to ascertain the performance of the sesame marketing participants, which included the licensed buying agents, rural buyers, wholesalers and retailers. The retailers recording the highest marketing efficiency is not a surprise considering their role in the marketing system. They are the group of marketers that sells the product to the final consumers at the quantity needed to satisfy their wants, most of people buying from the retailers are not buying for profit gain but rather for satisfaction on the usage of the product hence the retailers had every opportunity of exploiting the market. Another advantage gained by the retailers in the study is that the major purchase of their produce was directly from the producers. The efficiency ratio shows how well the marketer is able to maximize output using the little resource at hand. The result disagrees with the findings of Ibrahim, (2013) on marketing of shea butter who found that rural buyers are more efficient than the wholesalers and retailers.

Table 3.1 provides details of the value added during sesame marketing, costs of marketing services and the marketing efficiency. The retailers accounted for the bulk of the value added, accounting for ₦21,908.39, compared to the ₦15,492.31 recorded by the Licensed Buying Agents. Also the wholesalers recorded the highest cost in sesame marketing followed by the retailers that ₦8,746.24 and ₦8,279.86 respectively. On the other hand, the retailers recorded the highest marketing efficiency of 265% compared to the 206% obtained by the Licensed Buying Agents. The result of the pool sampled marketers revealed the sesame marketing was generally efficient with the marketing efficiency value of 240%. The implication of this result is that, through the wholesalers incurred more cost because of numerous hands the produce passes through, the retailers are at advantage of being efficient because of less marketing cost. The result generally implies a positive trend of input-output relationship on the part of all the participants in the marketing system.

Efficiency scores levels of sesame value chain actors

The distribution of sesame marketers based on their marketing efficiency score in percentages is presented in Table 4. As depicted in Table 4, 85%, 84%, 73% and 68% of the Licensed Buying Agent, Rural Buyers, Wholesalers and Retailers respectively, obtained efficiency score ranges from 100% to 300%. The scores depict high efficiency ratio among the marketing participants. Also, the Retailers had the highest efficiency mean score of 267%. The implication of this finding is that generally the participants in the marketing system of sesame are making appreciable gain in the area of input/output relationship. This is in line with the findings of Olukosi *et al.*, (2005) that marketing efficiency is a function of the input used in relation to output realized.

Factors influencing efficiency of sesame value chain actors

The regression result of the factors influencing the sesame marketing efficiency in the study area is presented in Table 5. Exponential production function was chosen as the lead equation based on the statistical criteria ranging from the sign of the coefficient, $R^2$ value and number of significant variables. The value of coefficient of determinations ($R^2$) indicated that 84% of the variation in marketing efficiency was explained by the independent variables included in the model, while the remaining 16% was as a result of omission of important explanatory variables, as well as errors in estimation. The F-value indicates the overall significance of the model, thus, confirming the appropriateness of the relationship between the dependent variable and the independent variables. Moreover, the coefficient of independent variables, such as age, transportation, income, labour, tax, storage and gender were statistically significant (at levels ranging from $P<0.1$ to $P<0.01$). The implications of these results are that all the significant variables had either positive or negative influence on the marketing efficiency, which means that as the variables increases/decreases by 1 and 10%, marketing efficiency will increase/decrease by their corresponding coefficients, that is as the age of the marketer increases by 1% during his/her active stage, marketing efficiency will increase by 0.026%. As the income of the market sparticipant's increases, the efficiency increases because it stimulates more commitment of the marketers. On the other hand, reduction on the cost of transportation, labour cost, market tax and storage cost in marketing of sesame will increase the profit margin of the marketers, there-by improving the marketing system, this means that a reduction in the cost of these variables will bring about increase marketing efficiency by their corresponding coefficients. However, any increase in the cost of these same variables will definitely reduce the marketing efficiency and invariably the profit margin of the marketers. According to Njeru (2004), two types of marketing efficiency were identified namely: operational efficiency and price efficiency. While the operational efficiency measures the productivity of performing marketing services such as transportation, handling and storage services, the pricing efficiency is concerned about how effectively price reflects the cost of carrying out the marketing services in a marketing system to meet consumer satisfaction.

Constraints faced by sesame value chain actors

Table 6 shows the distribution of respondent according to the constraints faced in sesame marketing, as ranked using the Likert scale. The result shows that most of the constraints have their weighted mean rating of equal to or greater than 3 which is the mean cut and were considered as severe constraints, while those below this threshold were taken as not severe constraints. The results reveal that high purchase cost of sesame ranked first, with a mean of (4.57), transportation cost ranked second with a mean of (4.39), tax payment ranked third a mean of (3.48), labour cost ranked fourth with a mean of (3.50) and lack of access to formal credit ranked fifth with a mean of (3.28) as the most severe constraints faced by sesame marketers in the study area. Most of the roads leading to the farms and markets are inaccessible by cars especially during the rainy seasons. They have to trek a long distance carrying their produce on their heads or use wheel barrow as a means of transportation. As a result of inadequate feeder roads, this translates into high cost of transportation in moving farm produce from the rural areas to urban markets. Taxes collected by Local, State and Federal Governments. Other unethical charges are levies by crooked officials, especially those along the produce checking points from one Local Government Area to another. This drastically reduces the profit of sesame marketers.

Also, most of the marketers do not have access to credit facilities, because of high interest rate, absence of collateral security, improper record keeping by the marketers which is demanded by lending agencies. This situation accounted for low initial investment and hence small scale of operation. Thus, benefits of economies of size must have eluded many marketers. This is in line with the findings of Omotesho *et al.,* (2012) and Tiamiyu *et al.,* (2013) also observed high cost of transportation, access to credit, high cost of purchase and inadequate training among others as critical factors affecting marketers of sesame.

## CONCLUSION AND RECOMMENDATIONS

The result of the analysis shows that retailers had the highest marketing margin, highest return per naira invested and also the highest marketing efficiency score. However, sesame marketing was highly efficient and relatively profitable in the study area. However, based on the results of the study, the following recommendations were made:

i. Marketers should be encouraged to form cooperative society to enable them pool their resources together and also have easy access to information on price changes so as to guide against high purchasing cost, this will strengthen their sesame marketing business.

ii. Sesame seed produced in Nigeria and study area in particular is mostly traded abroad in its raw form, processing sesame seed into different products will not only increase earnings to the national economy, but may also serve as a source of job creation. Therefore, government should also serve as a job creation.

iii. Financial institutions such as banks and insurance company should be established in the area to mobilize fund and give out loans to farmers. This will go a long way in helping them to purchase new innovation materials increase output and income and increase their standards of living.

iv. Effort should be made by Government to provide social amenities such as accessible roads, portable drinking water, electricity and clinics to encourage youth in sesame production this will curb the problem of rural-urban migration in the study area.

v. Government should assist sesame marketers in stabilizing the prices of their produce through setting out measures to reduce tax charges on sesame marketing and eradicate double taxation in such a way that marketers pay less tax.

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**Table 1: Distribution of the sesame marketers according to their socio-economic characteristics**

| Variables | Frequency | Percentage |
|---|---|---|
| **AGE (years)** | | |
| 21-30 | 30 | 12.5 |
| 31-41 | 177 | 73.75 |
| 41-50 | 33 | 13.75 |
| **GENDER** | | |
| Male | 157 | 65.42 |
| Female | 83 | 34.58 |
| **MARITAL STATUS** | | |
| Single | 229 | 95.42 |
| Married | 11 | 4.58 |
| **EDUCATIONAL LEVEL** | | |
| Non Formal | 78 | 32.5 |
| Formal | 162 | 67.5 |
| **HOUSEHOLD SIZE** | | |

| | | |
|---|---|---|
| 1 – 5 | 46 | 19.66 |
| 6 – 10 | 133 | 55.42 |
| 11 – 15 | 52 | 21.66 |
| > 15 | 9 | 3.75 |
| **MARKETING EXPERIENCE** | | |
| 1 – 5 | 14 | 5.83 |
| 6 – 10 | 110 | 45.83 |
| 11 – 15 | 108 | 45 |
| > 15 | 8 | 3.33 |
| **COOPERATIVE MEMBERSHIP** | | |
| Yes | 230 | 95.83 |
| No | 10 | 4.17 |
| **TOTAL** | **240** | **100** |

**Source: Field Survey, 2015**

**Table 2: Sesame marketers Cost and Returns Profiles (₦ /ton)**

| Variables | Licensed buying Agents | Rural buyers | Wholesalers | Retailles |
|---|---|---|---|---|
| Gross Income | 203,762.54 | 177,950.53 | 186,225.31 | 181,908.39 |
| Fixed Cost | 43.89 | 0.00 | 0.00 | 610,20 |
| Dep (W,mech.) | 43.89 | 0.00 | 0.00 | 0.00 |
| Dep. (Mudu) | 0.00 | 0.00 | 0.00 | 610.20 |
| Variable Cost (VC) | 195,751.71 | 167,129.89 | 172,797.48 | 167,669.67 |
| Labour Cost | 292.31 | 436.44 | 326.67 | 299.17 |
| Storage | 2,089.53 | 0.00 | 1,687.58 | 2,410.86 |
| Tax | 0.00 | 0.00 | 0.00 | 1,516.32 |
| Commission | 0.00 | 35.01 | 154.95 | 635.97 |
| Terminal Cost | 1,025 | 1,410.83 | 1,211.62 | 66.14 |
| Transfer Cost | 4,075.64 | 5,267.61 | 5,083.33 | 2,741.21 |
| Cost of purchase | 188,269.23 | 160,000 | 164,333.33 | 160,000 |
| Total Cost | 195,751.71 | 167,129.89 | 172,797.48 | 168,279.87 |
| Net Income | 7,965.94 | 10,830.64 | 12,179.73 | 13,628.52 |
| Return per naira invested (GI/TC) | 1.04 | 1.06 | 1.07 | 1.08 |

**Source: Computed from Field Survey, 2015**

**Table 3: Distribution of sesame marketing participants' margins and producer shares**

| Variables | Licensed buying Agents | Rural buyers | Wholesalers | Retailles |
|---|---|---|---|---|
| Selling Price | 203,762.54 | 177,950.53 | 186,225.31 | 181,908.39 |
| Purchase Price | 188,269.23 | 160,000 | 164,333.33 | 160,000 |
| Marketing Margin | 15,492.31 | 17,960.53 | 21,891.98 | 21,098.39 |
| Marketing efficiency (%) | 7.60 | 10.09 | 11.76 | 12.04 |
| Producers market share (%) | 92.40 | 89.01 | 88.24 | 87.06 |

**Source: Computed from Field Survey, 2015**

**Table 3.1: Sesame marketing efficiency across market participants**

| Operators | Value added(₦ /ton) | Cost of marketing(₦ /ton) | Marketing efficiency (%) |
|---|---|---|---|
| Licensed buying Agents | 15,492.31 | 7,526.37 | 206 |
| Rural buyers | 17,957.20 | 7,129.89 | 252 |
| Wholesalers | 20,637.21 | 8,746.24 | 236 |

| | | | |
|---|---|---|---|
| Retailles | 21,908.39 | 8,279.86 | 265 |
| Pooled Marketers | 18,998.78 | 7,920.59 | 240 |

**Source: Computed from Field Survey, 2015**

**Table 4: Distribution of sesame value chain actors' efficiency scores**

| **Operators** | **Frequency** | **Percentages** | **Mean** |
|---|---|---|---|
| Licensed buying Agents | | | |
| 100-200 | 8 | 40 | |
| 201-300 | 9 | 45 | |
| 301-400 | 3 | 15 | |
| Mean | | | **225** |
| Rural buyers | | | |
| 100-200 | 11 | 14 | |
| 201-300 | 56 | 70 | |
| 301-400 | 13 | 16 | |
| Mean | | | **253** |
| Wholesalers | | | |
| 100-200 | 18 | 45 | |
| 201-300 | 11 | 28 | |
| 301-400 | 11 | 28 | |
| Mean | | | **233** |
| Retailers | | | |
| 100-200 | 9 | 15 | |
| 201-300 | 32 | 53 | |
| 301-400 | 19 | 32 | |
| Mean | | | **267** |

**Source: Computed from Field Survey, 2015**

**Table 5: Regression results of factors influencing the efficiency of sesame value chain actors**

| **Variables** | **Linear** | Double-log | Semi-log | Exponential |
|---|---|---|---|---|
| Constant | 296.114 (0.39) | 83.242 (1.03) | 2.900 (0.57) | 3.752 (7.81)*** |
| Age | -27.282 (0.44) | 1.785 (0.96) | 0.270 (0.73) | 0.026 (2.80)*** |
| Gender | 13.208 (0.61) | 18.960 (1.18) | 0.169 (1.46) | 0.162 (1.93)* |
| Cooperative | -10.706 (0.28) | 1/835 (0.76) | 0.297 (1.25) | 0.242 (1.74) |
| Experience | -12.077 (0.6) | -1.878 (0.76) | -0.251 (2.14)* | -0.013 (1.16) |
| Credit | 26.969 (0.97) | 26.099 (1.31) | 0.080 (0.54) | 0.093 (0.89) |
| Extension | 52.055 (1.51) | 13.328 (0.67) | 0.177 (0.89) | -0.002 (0.02) |
| Transportation | 112.888 (7.90)*** | 0.014 (3.12)*** | 0.874 (11.08)*** | 0.00 0 (4.10)***) |
| Purchase Price | -28.397 (0.05) | 0.000 (1.88)* | -0.441 (1.14) | 0.000 (0.36) |
| Income | -24.483 (1.88)* | -0.003 (8.86)*** | 0.003 (0.04) | -0.000 (10.07)*** |
| Labour Cost | -27.566 (81)* | -0.030 (4.93)*** | -0.004 (0.004) | -0.000 (4.17)*** |
| Tax | -41.092 (6.92)*** | -0.055 (5.59)*** | -0.393 (9.38)*** | -0.001 (6.43)*** |
| Storage | 3.886 (0.39) | -0.020 (4.87)*** | 0.138 (2.09) | -0.000 (3.65)** |
| $R^2$ | 0.72 | 0.68 | 0.84 | 0.84 |

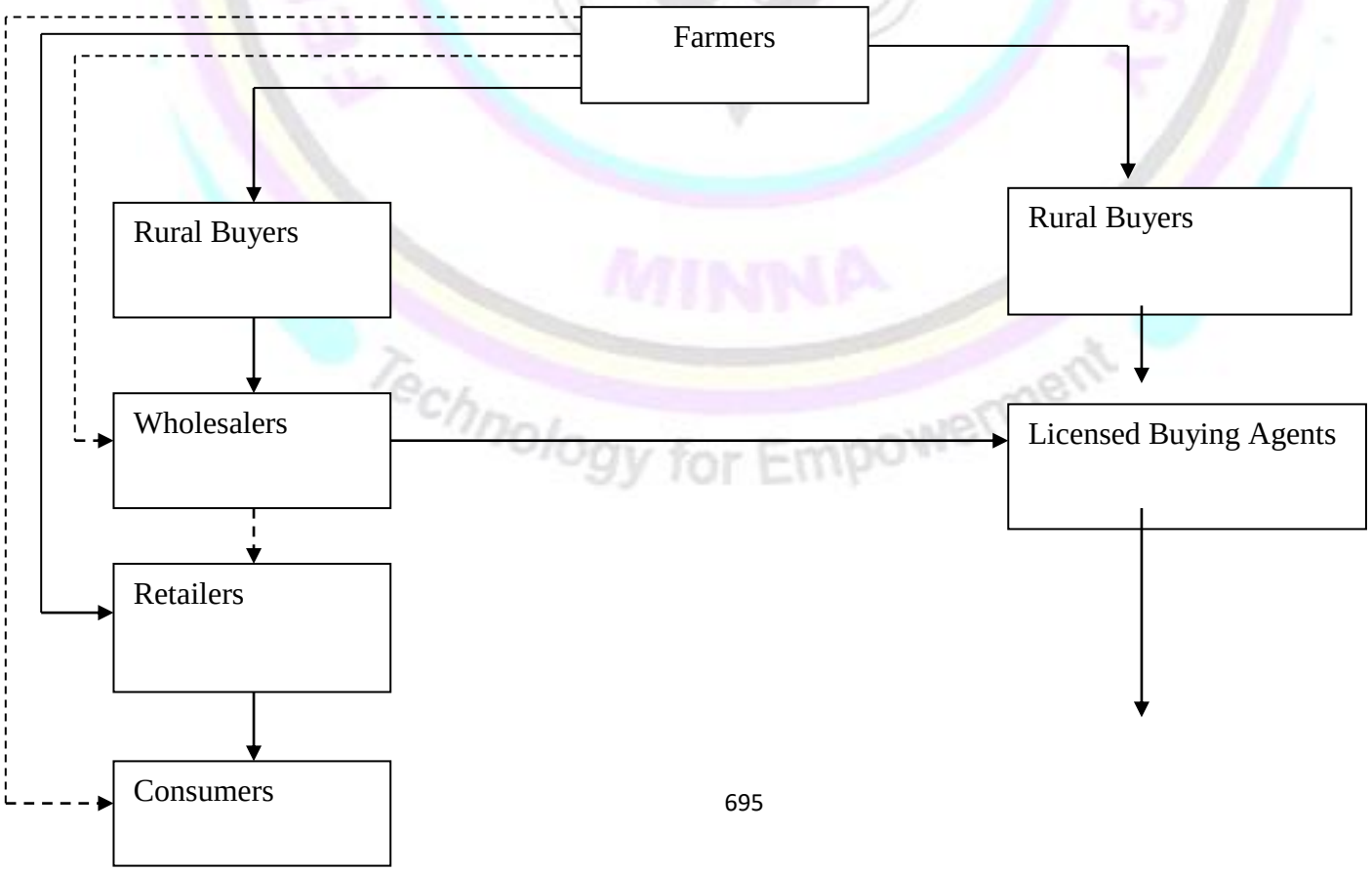
| | | | | |
|---|---|---|---|---|
| $R^2$ adjusted | 0.70 | 0.66 | 0.83 | 0.83 |
| F-Ratio | 55.07*** | 46.93*** | 87.28** | 67.66** |

**Source: Computed from Field Survey, 2015**
**Note: ***, ** and * implies statistically significant at 1%, 5% and 10% respectively**

**Table 6: Distribution of Respondents According to Sesame Marketing Constraints**

| Variables | Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree | Weighted sum | Weighted mean | Overall | Rank |
|---|---|---|---|---|---|---|---|---|---|
| Transportation | 1(5) | 7(3.5) | 31(15.5) | 41(20.5) | 120(60.0) | 872 | 4.36 | Severe | 2nd |
| Commission | 23(11.5) | 45(22.5) | 83(41.5) | 49(24.5) | - | 558 | 2.79 | Not | 7th |
| Lack of experience | 3(1.5) | 28(14.0) | 80(40.0) | 88(44.0) | 1(0.5) | 656 | 3.28 | Severe | 4th |
| Educational | 8(4.0) | 48(24.0) | 119(59.9) | 23(11.5) | 2(1.0) | 563 | 2.82 | Not | 6th |
| Access to credit | 23(11.5) | 133(66.) | 19(9.0) | 15 (7.5) | 10(5.0) | 456 | 2.28 | Not | 8th |
| Tax | 3(1.5) | 9(4.5) | 81(40.5) | 104(52.0) | 3(1.5) | 695 | 3.48 | Severe | 3rd |
| Cost of labour | 3(1.5) | 16(8.0) | 69(34.5) | 102(51.0) | 10(5.0) | 700 | 3.50 | Severe | 5th |
| Cost of purchase | 1(0.5) | 4(2.0) | 5(2.5) | 61(30.5) | 129(64.5) | 913 | 4.57 | Severe | 1st |

**Source: Field Survey, 2015** **Figure in parentheses are percentages**




Main distribution channel

Minor distribution channel

**Figure 1: Marketing channel of sesame in FCT Abuja, Nigeria.**