# ECONOMICS OF MARKETING BENNISEED IN NASARAWA STATE, NIGERIA

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**Abstract**
*The performance of the marketing system of benniseed in Nasarawa State was determined by using marketing margin models, Analysis of Variance and Duncan multiple range test. Primary data used for analysis were generated through random sampling of 90 farmers and 270 regular middlemen. The results showed that the mean marketing margin was 18.2%, marketing costs 12.8%, net profit 8.3% and farmer's share 78.9% of the retail price. These values indicated efficient and competitive trends under the prevailing circumstances. ANOVA results showed that marketing margins at the three main market centers were significant at 0.05 level of probability while the multiple range tests showed that marketing margin was highest in Doma Nassarawa central markets.*
**Keywords:** *Economics; Benniseed; Marketing Margins; Nigeria.*
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## Introduction

Agricultural marketing was viewed by Olukosi and Isitor (1990) and Idem (1999) as the process by which agricultural products flow physically and economically from the producers to the consumers in order to effect exchange of goods and services that satisfy the needs of individuals, groups or the entire society. In the process of marketing, buyers and sellers are linked together and can react to current situations of supply and demand. Participants thereby generate income which enhances their welfare. Generally, an effective and efficient marketing system enhances consumption, output and economic development.

Marketing margin for a particular commodity is the difference between what the consumer pays for the final product and the amount the producer receives (Hays, 1975; Abbott and Makeham, 1986; Olukosi and Isitor, 1990; Amobi, 1996; Arene, 2003). At each intermediary level, it is the difference between price received on resale and the purchase price (Mejeha et al, 2001; Gabre-Madhin, 2001). Marketing margin reflects the costs and profit of middlemen (Olukosi and Isitor, 1990; Minot and Goletti, 2001). The costs are incurred mainly in adding utilities of time, form, place and possession. Costs mentioned by Barallat *et al* (1987) include payment for all initial assemblage, storage, processing, transporting, warehousing and retailing charges. The profit range

accruable to the market participants gives an indication of market performance (Achoga and Nwagbo, 2004).

Marketing margin has remained an important tool in analyzing the performance of marketing systems. Marketing costs and profit margins which make up marketing margins can be both indicators of efficiency or inefficiency of marketing systems. The benefits that accrue to the individual participants may be incentives or disincentives to continue in the business. Proper computation, understanding and interpretation of marketing margin value in relation to prevailing circumstances can reveal a lot about the performance in the marketing channels.

Middlemen play very important roles in the marketing of farm products. Through them, time, place and possession gaps that separate goods from those who want them are overcome (Kotter, 2003). They are better equipped by the virtue of their extensive contacts, experiences and scale of operations to offer farmers or firms more than they can do themselves. Besides, they are better placed to finance, move, store commodities and disseminate marketing information.

Benniseed (*Sesamun indicum L*)**,** also called sesame, is believed to have originated from tropical Africa. Major producing areas include India, China, Malayar, Sudan, Mexico, Pakistan, Venezuela, Uganda, and Nigeria; while Japan, U.S.A., Italy, Israel and Venezuela are major importers (Negedu and Habeeb, 2000).

In Nigeria, the crop is widely grown in the northern and central zones of the country as one of the major important export crops (Ochigbo and Idowu, 2002). Average seed yields, ranging from 500-800 kg/ha from farmers fields are considered relatively low if compared to average yields of 1000kg/ha obtained from research farms (NCRI, 2002). Output figures increased from 56,000 metric tonnes in 1994 to 85,000 metric tonnes in 2000 (Negedu and Habeeb, 2000). Generally, sesame seed is used in food preparation such as stew and confectioneries. The oil is used in manufacturing industries as well as substitute for olive oil in salads and cooking oil.

Benniseed is an important commercial crop in Nasarawa state, and one of the major crops produced in different locations in the State. With its estimated output of 15,000 metric tonnes per annum (about 40% of the national output) from about 35000 hectares under cultivation, an estimated foreign exchange earning of US $12.3 million can be generated (Ochigbo and Idowu, 2002). Production has been increasing steadily as a result of favorable prices. Consequently, earnings of producers and marketers are enhanced.

The knowledge of the role of the principal market participants such as farmers, middlemen (including exporters) and consumers is yet to be fully investigated and documented. Benniseed 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 marketing margin of benniseed in Nasarawa State is therefore of exploratory importance because it will indicate the efficiency or otherwise of the marketing system. Utilizing such information can be one of the

basis for improving the performance of the marketing system and hence production and income of farmers.

The broad objective of the study is to analyse the marketing margin of benniseed in Nasarawa State. The specific objectives are to:

(i). identify the main channels of distribution and participants in the marketing system of benniseed;
(ii). estimate the marketing margin of benniseed by type of market participant;
(iii) identify major constraints to benniseed marketing in the area.

**Hypothesis**:
The null hypothesis is that marketing margins of wholesalers and retailers at the three main market centers in Nassarawa are not significantly different from among themselves at each level.

**Methodology**

**The Study area**

The study area is Nasarawa State. Nasarawa State was created out of former Plateau State in October 1996, with a land area of 27862.01 $km^2$ and a population of

1, 863,275 (NPC, 2006). It lies between latitudes $8^0$ 10" to $10^0$ N and longitudes $7^0$ 10" to $9^0$ 20" E in the Guinea savanna of Nigeria. It is bounded by Kaduna State to the North, Plateau state to North-East, Taraba State to the East, Benue State to the South-East, Kogi State to the South and Federal Capital Territory (FCT) to the North-West. The thirteen Local Government Areas that make up the State are Akwanga, Awe, Doma, Karu, Keana, Keffi, Kokona, Lafia, Nasarawa, Nasarawa-Eggon, Obi, Toto and Wamba.

Each Local Government Area of the State has the potential to produce benniseed. Presently, benniseed is produced in commercial quantities in Doma, Lafia, and Nasarawa Local Government Areas with the bulk coming from Doma Local Government Area which has been the traditional growing area.

**Sampling procedure**

The sampling procedure involved the use of purposive (to cover the major agricultural zones producing Benniseeds) and simple random sampling techniques. Doma, Lafia and Nasarawa Local Government areas, which are the main growing areas of benniseed and the main market centres of the commodity were purposively selected. A random sample of 90 farmers was done by using cluster sampling technique based on major village areas producing the product. The sample consisted of 30 farmers from each of the three main producing Local Government Areas. Similarly, a random sample of 270 middlemen consisting of 15 local buying agents, 15 company buying sub-agents, 15 company buying agents,15 wholesalers and 30 retailers from each of the three market centers were selected from a stratified sample frame of 645 middlemen and retailers prepared with the assistance of key market informants. This served as the sampling frame.

**Data collection**

Data for this study were collected from primary and secondary sources. Secondary source came from text books, journals and other published materials. The primary data were collected with two sets of questionnaire. The first set of questionnaire was administered on benniseed farmers during the 2004 cropping season (July-December) eliciting information on output, marketable surpluses, sales, major buyers, prices, sales outlets, and returns/income. The second set of questionnaire was administered on middlemen for the 2004/2005 marketing season (December 2004 - November 2005) to generate information on costs, prices, returns, quantity, handling, transport, sales outlets, processing, packaging, and storage.

**Data analysis**

Data collected for the realization of objective (i) were analyzed using descriptive statistics while marketing margin analysis was done to realize objective (ii).

Marketing margin which was a dependent variable in the analysis of variance is computed by using the marketing margin model. It is represented as:

$$GMM (₦) = Cp_0 – FP_f$$

This is expressed as a percentage of retail price as:

$$GMM\% = \frac{CP_O - FP_f}{CP_O} x \quad 100 \qquad \text{---------- (1)}$$

Where:

GMM = Gross Marketing Margin

$CP_0$ = Consumer or retail price (₦)

$FP_f$ = the price the farmer gets (₦)

Analysis of variance was used to test the stated hypothesis. The marketing margin model stated mathematically below is employed to estimate the marketing margins of wholesalers and retailers.

$$GMM(₦) = SP – PP$$

This is expressed as percentage of retail price as:

$$GMM(\%) = \frac{SP - PP}{RP} x \quad 100 \qquad \text{----------(2)}$$

Where:

GMM = Gross Marketing Margin

SP = Selling price (₦)

PP = Purchase price (₦)

RP = the retail price(₦)

The marketing margin employed in this study which enables costs and profit margins of middlemen to be computed is stated as:

$$GMM_f(₦) = \sum_{i=1}^{n} X + P_m$$

Expressed as a percentage of retail price as:

$$GMM(\%) = \frac{\sum_{i=1}^{n} X + P_m}{RP} \; x \; 100 \qquad \text{----------(3)}$$

Where:

$GMM_f$ = Gross Marketing Margin estimated by functional approach

$X_{i\text{-----}n}$ = various marketing costs involved in the marketing of a product (₦)

$P_m$ = Profit margin of middlemen (₦)

RP = Retail price (₦)

This is used in conjunction with (1) and (2).

The procedure for computing net marketing margin is as stated below:

$$NMM\% = \frac{GMM - \sum_{i=1}^{n} X}{RP} \; x \; 100 \qquad \text{---------- (4)}$$

Where:

NMM = Net Marketing Margin

GMM = Gross Marketing Margin in (1) and (2)

$\sum_{i=1}^{n} X$ = Costs of marketing (₦) in (3)

RP = retail price (₦)

The objective (iii) was achieved using 5-point liket scale which is presented as:

Very strongly affected (VSA) - 4 point
Strongly affected $\{SA\}$ - 3 points

Partially affected (PA) - 2 point
Slightly affected (SLA) -1 point
Not affected (NA) - 0 point

Decision rule: if the mean score is ≥ 2.5; accept the factor as one that sufficiently affects the marketing system.

**Results and Discussion**

**Marketing channel and quantities of benniseed handled by market participants.**

The marketing channel of benniseed is shown in Fig.1, while the quantities handled by market participants are presented in Table1

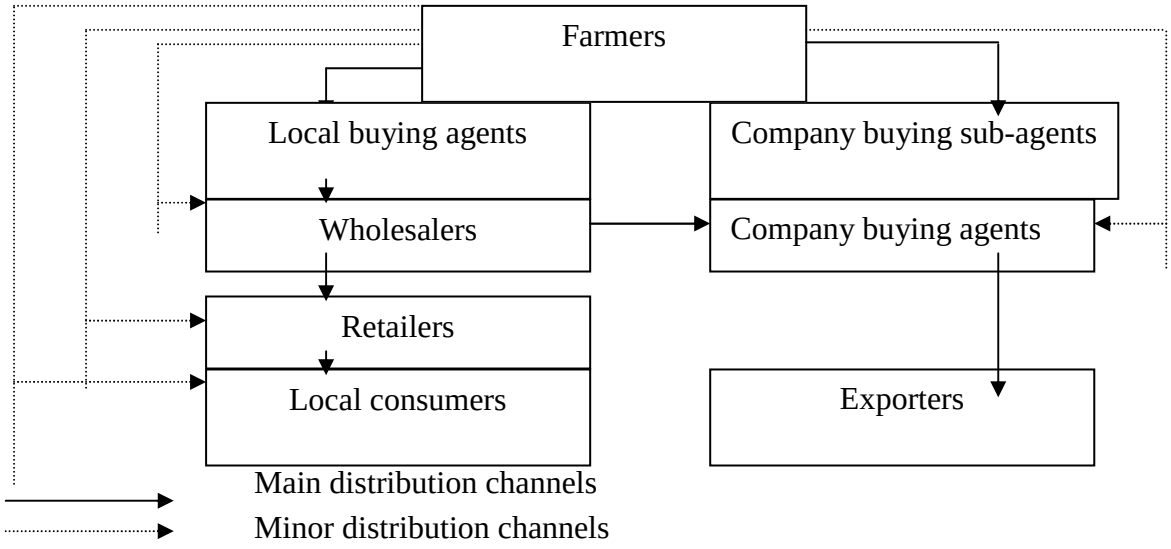


**Fig1: Marketing channel of benniseed in Nasarawa State**

Several farm families produce benniseed in Nasarawa State. As indicated in table 1, mean quantities of the commodity sold per farmer surveyed were 1518.76kg. The company buying agents handled the highest quantities of benniseed with the mean estimated at 64549.58kg.

In Figure 1, there are two main distribution channels which constituted the marketing channel of benniseed and by which benniseed passed through to the various consumers in Nasarawa State. The first distribution channel was from farmers to local buying agents, to wholesalers, to retailers and to local consumers. The second channel started from farmers to company buying subagents, to company buying agents and then to export companies. Distinctly, export companies purchased the bulk of the product through their company buying agents who in turn partly relied on the sub-agents in order to cope with their buying schedules and targets from time to time. Both categories of buying agents purchased the commodity (benniseed) mainly from farmers and wholesalers, although in rare cases from rural market retailers. The conventional path of distributing benniseed to domestic or local consumers was through local buying agents, wholesalers and retailers. There were instances however where wholesalers, retailers and consumers purchased directly from

farmers. The roles of buying agents were crucially important because buyers had limited time frame to economically buy particular consignments of the commodity.

**Table: 1. Mean Quantities of benniseed in kilogrammes Handled by Market Participants**

| Market participants | Mean Quantity handled (Kg) | Standard Deviation |
|---|---|---|
| Farmers | 1518.76 | 1599.76 |
| Local Buying agents | 18938.18 | 7084.67 |
| Company buying sub-Agents | 45476.89 | 14460.61 |
| Company buying agents | 64549.58 | 29730.38 |
| Wholesalers | 30052 | 13799.92 |
| Retailers | 16128.39 | 16332.03 |

Source: Survey Data, 2005.

Table 1 shows that most of the quantities they handled were from company buying sub-agents whose mean distribution was estimated at 45476.89 kg. The remaining quantities were purchased directly from wholesalers and farmers by company buying agents for export companies. The mean quantities of 30052.00 kg were purchased by wholesalers directly from farmers or through local buying agents and distributed to company buying agents and retailers. The mean sales of 16128.39 kg for retailers in table 1 were a clear indication that retailers purchased relatively small quantities of benniseed from farmers and wholesalers and distributed same to local consumers.

**Marketing Costs and Marketing Margins**

In a competitive and efficient market, marketing costs determine the size of returns to farmers and middlemen. Besides, computations of marketing margins are largely dependent on marketing costs. These underscore the importance of their consideration in this study.

**Marketing Costs**

The breakdown of the wholesale and retail costs incurred in the marketing of benniseed is shown in table 2. The costs of wholesaling consisted mainly of charges for the storage, transportation, handling of the product, levies imposed by government agents or representatives at designated roadblocks and commission paid to buying agents.

**Table 2: Breakdown of Marketing costs for Wholesaling and Retailing of Benniseed in Nasarawa State.**

| | **Marketing costs per location (₦/Kg)** | | | |
|---|---|---|---|---|
| **Marketing costs Items** | Lafia | Doma | Nasarawa | Average |
| For wholesalers | | | | |
| Storage | 1.50 | 1.00 | 0.83 | 1.11 |
| Transportation | 1.80 | 1.70 | 1.90 | 1.80 |
| Loading | 1.00 | 1.00 | 0.76 | 0.92 |
| Off-loading | 0.80 | 0.50 | 0.80 | 0.70 |
| Commission/ market fees | 0.50 | 1.78 | 2.35 | 1.54 |
| Repackaging and stacking | 1.60 | 1.30 | 0.98 | 1.29 |
| Levies at road blocks | 0.50 | 0.30 | 0.50 | 0.43 |
| Others | 0.20 | 0.37 | 0.40 | 0.32 |
| Total marketing costs of wholesalers | 7.90 | 7.95 | 8.52 | 8.11 |
| For retailers | | | | |
| Transfer | 0.50 | 0.47 | 0.60 | 0.52 |
| Repackaging and merchandising | 0.90 | 1.02 | 0.85 | 0.92 |
| Others | 0.50 | 0.38 | 0.40 | 0.42 |
| ***Total marketing costs of retailers*** | 1.90 | 1.87 | 1.85 | 1.86 |
| Total costs of marketing (wholesalers and retailers) | 9.80 | 9.82 | 10.37 | 9.97 |

Source: Field Data, 2005

These costs tended to vary slightly (e.g. in Lafia and Doma) or appreciably (e.g. in Nasarawa) between the three market centers. The commission was high because of the extra transfer charges they incurred in getting the product to the buyers based in other market centers. Conversely, payment for movement of the commodity within, to and from the markets, handling, repackaging and merchandising constituted the main costs of retailing. Efforts at reducing these costs will no doubt improve the efficiency of the marketing system, *ceteris paribus.*

**Marketing Margin**

Marketing margins were computed at wholesale and retail levels for the different market centers. Average figures are shown in table 3.

**Table 3: Marketing Margin per Kilogramme of Benniseed in Nasarawa State**

| | % of retail prices | | | |
|---|---|---|---|---|
| **Market Centre** | **Farmer's share** | **Marketing margin of Wholesalers** | **Marketing margin of retailers** | **Total marketing Margin** |
| Lafia | 82.9 | 12.0 | 5.1 | 17.1 |
| Doma | 77.9 | 16.9 | 5.2 | 22.1 |
| Nasarawa | 76.0 | 16.0 | 8.0 | 24.0 |
| Average | 78.9 | 15.0 | 6.1 | 21.1 |

Source: Survey Data, 2005.

In Table 3, calculated absolute marketing margins for Doma and Nasarawa were higher than that of Lafia by 5% and 6.9% of the retail prices respectively. However, the average marketing margin of the three centers can be rated as low. Similarly, the estimated margins of wholesalers and retailers were correspondingly low. The low marketing margin of benniseed is in line with what is expected from undifferentiated primary products in competitive markets (Gabre- Madhin, 2002). The marketing margins of retailers were generally lower than those of wholesalers. This was probably because retailers typically bought and sold benniseed in the same market, thereby incurring less cost. The average farmer's share of 78.9% was an indication that the proportion of the consumer price going to the farmer was favourable. To generalize the marketing margin for the entire State, the null hypothesis which states that the marketing margins at the three main market centres are not significantly different was tested for significance at 5% level of probability. From the F-ratio distribution, the critical value of F with 2 and 87 degrees of freedom at 0.05 level of probability is 3.15. Since the computed value of 4.595 is greater than the table value of 3.15, the null hypothesis is rejected. This therefore means that marketing margins at the three main market centers of benniseed in Nasarawa State are significantly different.

**Table 4A: Analysis of Variance Test for Comparing Marketing Margins at the Three Main Market Centers in Nasarawa State**

| **Source** | **Type III Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
|---|---|---|---|---|---|
| Corrected Model | 2080.867[a] | 2 | 1040.433 | 4.595 | .013 |
| Intercept | 29811.600 | 1 | 29811.600 | 131.672 | .000 |
| LGAs | 2080.867 | 2 | 1040.433 | 4.595 | .013 |
| Error | 19697.533 | 87 | 226.408 | | |
| Total | 51590.000 | 90 | | | |
| Corrected Total | 21778.400 | 89 | | | |

a. R Squared = .096 (Adjusted R Squared = .075)

Source: Survey Data, 2005.

The next task is to determine the LGA whose marketing margin is highest. The Duncan multiple range tests were used to determine the LGA whose marketing margin is highest. It shows that there is that Lafia and Doma had the highest marketing margin. And there is no statistical difference between the margins in both markets. (See table 4B)

**Table 4B: Duncan Multiple Range Test**

| | | Subset | |
|---|---|---|---|
| LGAs | N | B | A |
| Lafia | 30 | 11.67 | |
| Doma | 30 | | 19.83 |
| Nasarawa | 30 | | 23.10 |
| Sig. | | 1.00 | .403 |

Source: Survey Data, 2005.

**Comparison of marketing margins, marketing costs and net returns**

Estimated figures of marketing margins, marketing costs and net returns as percentages of retail prices at the three main market centers are presented in Table 5. Marketing costs were estimated at 12.8% of the retail price while net returns represented 8.3% of the retail price. The low proportion of retail price attributed to the costs of the marketing of benniseed is an indication that traders add relatively little value in terms of transport, storage and handling activities.

**Table 5: Marketing margins, marketing costs and net profits per kilogramme Resulting from the marketing of benniseed by type of market centre in Nasarawa State.**

| | **Comparison of marketing margins** | | |
|---|---|---|---|
| **Market centre** | **Marketing margin** | **Marketing cost** | **Net Profit** |
| Lafia | 11.67 | 11.8 | 5.3 |
| Doma | 19.83 | 12.8 | 9.3 |
| Nasarawa | 23.10 | 13.8 | 10.2 |
| Average | 18.20 | 12.8 | 8.3 |

Source: Survey Data, 2005.

Marketing costs and net returns estimated varied only slightly between markets, although it is also expected that the same pattern of variation may exist between middlemen. The relatively low marketing margins, costs and net profits corroborate the indications by Minot and Golleti (2001) that competitive pressure is expected to reduce profits and perhaps costs, resulting in lower marketing margin. Gabre Madhin (2001) attributed traders' net margins of less than 5% in grain trade to the existence of competitive pressure. Previous report of average gross margin of ₦28/kg for the State by Ochigbo and Idowu (2002) revealed that the production of benniseed was profitable. This indicates clearly that pricing must have reflected to a large extent the cost of production.

**Constraints**

The constraints and the response of the middlemen are shown in Table 4.9. This Table shows that the means obtained for low initial investment/capital, high transportation cost, poor storage facilities, lack of access to formal credit and heavy imposition of tax/levies are 3.00, 2.65, 2.72, 3.33 and 2.93 respectively. These are factors are constraints to middlemen involvement in the marketing of benniseed. Remoteness of markets form producing areas and poor accessibility to marketers were largely responsible for high transportation cost. Lack of access to formal credit accounted for low initial investment and hence small scale of operation. Thus, benefits of economies of size must have eluded many marketers. The main taxes imposed on marketers have been in the form of levies especially at roadblocks by state and Local Government officials. Many marketers did not have storage structures of their own. They depended on rented spaces of landlords who fix rent charges at their discretion. Surprisingly, by their mean rating of 2.24, the middlemen indicated that ineffective dissemination of information only partly affected them (marketers). This may not be unconnected with the proximity of Lafia and Doma markets and the free interaction among middlemen and farmers. Middlemen and farmers appear to be monitoring the rise and fall of the demand of his commodity. For many, the use of mobile phones has been easing communication. Similarly, a mean of 2.04 for small scale of operation shows that middlemen or markets were only partly affected by it.

**Table 4.9: Mean Item Score of Response of Middlemen Indicating the Extent to which they Affected by various Constraints in the Marketing of Benneseed in Nasarawa State**

| Constraints | Standard deviation | Mean Score | Remarks |
|---|---|---|---|
| Low initial investment/capital | 1.27 | 3.00 | Accepted |
| High transportation cost | 1.07 | 2.65 | Accepted |
| Poor storage facilities | 0.89 | 2.72 | Accepted |
| Lack of access to formal credit | 1.15 | 3.33 | Accepted |
| Small scale of operation | 0.74 | 2.04 | Rejected |
| Lack of standardization of measure and Quality | 0.71 | 0.99 | Rejected |
| Ineffective dissemination of information | 1.42 | 2.24 | Rejected |
| Dishonesty of buying agents and farmers | 1.44 | 1.11 | Rejected |
| Lack of facilities for processing | 0.46 | 0.15 | Rejected |
| Heavy imposition of taxes/levies | 1.00 | 2.93 | Accepted |

**Sources: Survey Data, 2005.**

**Conclusion and recommendation**

From the findings of this study, the marketing system of benniseed, on the average, can be regarded as efficient. But, there is still need for improvement on the individual performance of market participants involved. Thus, all those concerned with the marketing of benniseed need to

have understanding of marketing margin information and its application on regular basis. Major constraints included: low initial investment/capital, high transportation cost, poor storage facilities and lack of access to formal credit.

The study recommends that (a) farmers need to sell their products in Doma and Nasarawa markets which has the highest margin in order to maximize profit. (b) farm service centers with adequate storage facilities should be established by governments to aid marketing of benniseed.

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