

## ANALYSIS OF MARKETING OF MEDICINAL AND AROMATIC PLANTS IN DELTA STATE, NIGERIA.

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### ABSTRACT

The study examined small-scale marketing of medicinal and plant (MAPs) in Delta State of Nigerian. A total of 60 respondents were purposely selected from six villages towns in the study area. Primary data were collected with the aid of questionnaire and were analyzed using simple descriptive statistics and linear regression model. The result revealed that MAPs marketing assumed a perfect competitive structure and the products were harvested from the wild. It revealed that medicinal and aromatic plants (MAPS) were profitable. But aromatic plants are more profitable. It also revealed that marketing of guinea corn leaf had the highest marketing efficiency in the study area. It was found out that four of the eight parameters in the regression model were significant in affecting the marketing efficiency of MAPs in the study. These include profit, Total revenue, transportation cost and shop rent. It was recommend among others that MAPs marketing should be promoted as a means of safe and effective health care and as a mean of livelihood in Delta State, Nigeria

**Keywords:** Economic, Marketing, Medical, aromatic, plants

### INTRODUCTION

Medicinal plants were used in early civilization for many purposes, such as, food curative and ritual. It is also a practice based on the use of plant and plant extracts. (Brooks 2004) The history of medicinal and aromatic plants (MAPS) started in China in 2800 B.C. (WHO 2(000). The growing need to popularize the use of medicinal and aromatic plants MAPs many significant development and intervention programmes such as marketing of MAPs have been made in recent time. For instance, in Europe, the use of MAPs % was promoted by King Henry VII of England. A comprehensive search of known plants for medicinal treatment is an enormous task. Of the estimated 250,000 plants species on earth, only 2% have been thoroughly screened for chemicals with potential medicinal uses. (Robbins, 1999). It was ascertain that herbal medicine is a beneficial evolution (Olasebikan 2008). In line with global trend, modern and alternative medicine are coming together to provide total health care. For instance, in China almost 80 percent of public hospitals have the orthodox section and the alternative medicine section. It is gradually

becoming a global practice. In United Kingdom, 60 percent of people are living on medicinal plants, which are becoming scientific and modernized (WHO 2002). In Nigeria, the marketing of medicinal and aromatic plants (MAPs) is not new, for instance, garlic, aloe Vera, lemongrass, Iru, Aroma leaves etc are used as antiviral, antibacterial and antifungal, as well as food seasonal.

Marketing of medicinal and aromatic plant will therefore create employment, income and means of livelihood to the people of Delta State, Nigeria. Efficient marketing of medicinal and aromatic plants are capable of stimulating its production (supply) and utilization (demand). Efficient trade in MAPs could generate foreign exchange earnings, contribute to GDP, alleviate poverty and contribute to the country's health care delivery system in Nigeria. (Akirga, 2006.). Yet in Nigeria, particularly, Delta State, there is lack of empirical data in the marketing and demand for medicinal and aromatic plants (MAPs). Hence this issue is worthy of investigation in Delta State, Nigeria.

In recent time empirical studies on medicinal and aromatic plants (MAPs) are gaining popularity in international debates. With increasing popular demand for medicinal and aromatic plant (MAPs) across the globe, its marketing is expected to grow to 5 trillion USD by the year 2050. Yet its domestic marketing system in Nigeria has not been studied critically before now. There is therefore the need to critically examine the marketing system of MAPs in Delta State of Nigeria. This will enable us understand how MAPs flows from the source through the local collectors/harvester to the final consumers. Before now, though the demand for MAPs create business opportunities to people in the study area, it is generally believed that only a small financial benefit from MAPs marketing go down to the collectors and harvesters. About 95% of MAPs are harvested and collected in the wild (WHO,2000). There is no record before now as to the quantity and monetary values of MAPs traded in this area. If this continues undermined, it could lead to an increase in unregulated trade./illegal marketing.

The broad objective of this paper is to investigate the small scale marketing of medicinal and aromatic plant (MAPs) in Delta State. Specifically, the paper is designed to:

- (i) describe the marketing system of MAPs in the study area;

- (ii) ascertain the quantity traded monetary value of MAPs traded;
- (iii) determines the profitability in marketing of MAPs ; and
- (iv) identify the significant factors affecting the efficiency in the marketing of MAPs in the study area.

**RESEARCH METHODOLOGY**

**Study area, Sampling technique and Data collection techniques**

The research was conducted in Delta State. The area comprises of 25 local Government Area. The area was chosen for the study because the demand and supply of medicinal and aromatic plants is topical issue among the people. Delta State lies roughly between longitude 5.00 and 6\_30N. The sampling technique that was used is multi-stage random sampling. The study area Delta State is divided into large clusters. of three agricultural zones Using random sampling, one local government each was selected from the three agricultural zones to give total of 3 LGAs. By simple random sampling technique, two towns were selected from each of the three LGAs given a total of six towns/villages. From each of the six towns/villages, ten MAPs marketers were randomly selected. This gave as total of sixty respondents. Data for the study were collected from both primary and secondary sources. The primary data were obtained through the use questionnaire and interview schedule.

**Data analysis techniques**

Descriptive statistical tools (mean, percentages and tabular analysis) were used. Also total revenue and net profit functions as well as regression analysis were adopted.

**Total Revenue = Q.Pq**

Where:

Q = quantity traded

Pq = Unit price of the product,(₦)

Data were collected on six of MAPs products, (Bitter kola, Ginger, Garlic, Chloroquine stick, Guinea corn

leaf, Manpower stick). They are commonly sold in the market. Profitability of the Marketing of MAPs was determined by using convectional net profit equation; that is

$$\Pi = TR - TC.$$

Where:

**Π= Profit**

TR = Total revenue (₦)

TC = Total cost (₦)

**RESULTS AND DISCUSSION**

This section covers the following; MAPs marketing systems which embraces MAPs market structure and marketing channel; MAPs marketers socio-economics characteristics profitability and factors affecting efficiency in the MAPs marketing in the study area.

**MAPs Marketing System**

The structure of the MAPs market in the study area assumed a perfect competitive arrangement. One of the noteworthy features of maps market structure in the study area was the its pricing mechanism, in which prices were subject to and directed by the market forces of demand and supply. Relatively uniform prices were charged by every seller in the market except where there is difference bargaining power of participants. The regular customer has perfect information on the prices of the various MAPs products, while the new has no information. No uniform standard was practiced due to the fact that they were collected from the wild. The products were mainly packaged and sold in bundles (71.7%). Though the MAPs market environment allowed free entry and exit of private individuals, the market structure in the study area was still dominated by independent retailers and few wholesalers. Some of the wholesaler (gatherers) came from the rural areas. The retailer are (85%) more than the wholesaler (915%) The market is progressive but very gradual. The retailer enjoyed some advantage in MAPs marketing in the study area.

- i. The wholesalers brings the MAPs products to the shops of some of the retailers, saving them cost of transportation.(ii) they enjoyed the advantage on credit allowed by the wholesalers/collectors.(iii) Hoarding of MAPs products was minimized (iv) No MAPs marketing association was in existence.(v) some of the MAPs products are found around the environment.

ii. **Maps Marketing Channels**

The medicinal and aromatic plant (MAPs) marketing channel in the study area follows the flow chart pattern presented below:



Some medicinal and aromatic plants (MAPs) are gotten from the wild. The collectors/harvesters, then sell to the wholesalers, and the wholesaler determine the prices and they make more profit than the retailers and collectors. The retailers buy's then re-sell to the ultimate consumers, but make little profit. From the above chain, the wholesalers, are more favoured, because they determined the price of the products in the market.

#### Maps Marketing Efficiency

**Ginger:** A total of 1, 51950kg of ginger was traded in the studied area at 90 per kilogram, eta total cost of 4156,260. While a total revenue that was realized was ₦ 176,500. Profit made was ₦20, 240. Finally the marketing efficiency is (1.13) which is the list among the MAPs products in the studied area.

**Garlic:** From the Table 1, a total of 2,502.00kg of garlic was traded at N100 per kilogram and the total cost is N379,650. While total revenue generate was ₦466,000.00. And the profit was ₦86,350, while the marketing efficiency was 1.23.

**Biller Kota:** From the table 4.1.2 a total of 1,946.00 of bitter cola was traded at ₦100 per kilogram at a total cost of N217,010.00. While the total revenue generated was N257,300.00 and a profit of N40,000 was realized. And the marketing efficiency was 1.12.

**Guinea Corn Leaf:** A total of guinea 544.00kg of guinea corn leaf was traded at N50 per kilogram at a total cost of N38,680.00 and total revenue realized was N55,850.00. Profit made was N17,170.00, while the marketing efficiency was 1.44

**Chloroquine Stick:** A total 360.00 kg of chloroquine stick was traded at N10 per kilogram at a total cost of 51,930.00 while total revenue that was realized was N64,900.00 and profit made was N12,970 at the end of the month. Thus the marketing efficiency of choloroquine sticks.

**Manpower Stick:** A total of 355.00kg of manpower stick was traded at N100 per kilogram and at a total cost of N48,660.00. While total revenue that was realized was N59,200.00 and profit of N 10,450.00 were made at the end of the month. The marketing efficiency was (1.22).

The implication of these findings was that, guinea corn leaf has the highest efficiency ratio (1.44) which implies that it was the most efficiently marketed in the studied area, while ginger was the least with efficiency ratio of (1.13). Garlic was the most profitable of the medicinal and aromatic plants studied with a net profit of N86,350.00 monthly. From the above result, it revealed that the aromatic plants had more demand and profit than the medicinal plants; the reason could be due to the fact that aromatic plants are demanded and consumed daily such as foods; drugs and as food seasonal. This is not the case with medicinal plants that demanded only for the treatment of ailment, which is

occasional. This result agreed with the observation of Olukosi, Isitor and Ode; (2007) when they asserted that, the higher the efficiency ratio the higher the marketing efficiency. The marketing efficiency ranking of medicinal and aromatic plants studied is schematically presented as follows **guinea corn leaf > Chloroquine stick>garlic>Manpower stick>Bitter kola>ginger.**

#### Quantity Traded of Maps in the Studied Area

From the above table 4.2, the following quantities were traded in the studied area. Ginger, 1519.5kg; Garlic 250kg; Bitter cola 1946kg; Guinea corn leaf 544kg; Chloroquine stick 355kg. This result shows that more quantities of garlic, bitter cola and ginger were traded in the market

#### Monetary Value of MAPs Traded in the Studied Area

Summary statistic of marketing parameters in table 4.2. It was observed that the following were the total procurement cost and marketing cost of MAPs products in studied area. Ginger N156,260; Garlic N379,650; bitter cola N217,01.0; Gvc\ea. cocakeak K38 ,680s, Choloroquine stick N51,930; Manpower stick N48,660.

Thus the following were the total revenue that was generated from each products; Ginger N176,500; Garlic N466,000; bitter kola N257,300; Guinea corn leafN55,850; Choloroquine stick 64,900; Manpower stick N48,660. thus the following were the total revenue that was generated from each product; Ginger N176,500; Garlic N466,000; Bitter kola N257,300; Guinea corn leafN55,850; Choloroquine stick N64,900; Manpower stick N59,200.

#### Profitability in the Marketing of MAPs in the study Area

The difference between the total revenue and total cost gives the profit margin which can be seen in the summary statistic of marketing parameters Table 2, they were; Ginger N20,240.00; Garlic N86,350.00; Bitter Cola N40,00.00; Guinea Corn leaf N17,170.00; Choloroquine stick N12,970.00; Manpower stick N10,540.00. In the studied area it was observed that the aromatic plants had more demand and profit than the medicinal plants. This agrees with the report of Aiyelaja Bello, (2006).

#### Estimation of MAPs Marketing Efficiency Model

In the estimation regression model, an attempt was made to identify which of the coefficients of selected variable provides a statistically significant contribution to the marketing efficiency of MAPs. The parameter coefficients were evaluated by means of t-test at 1% and 5%. The estimated regression equation is presented below:

$$Y = 1.280277 + 0.014383 X_1 + 0.000035X_2 + 0.000840X_3 - 0.000003X_4 + 0.000000X_5 + (22.5209)$$

$$\begin{aligned}
 & (0.4996) \quad (4.8997) \quad (0.1461) \quad (-) \\
 & (0.7682) \quad (-0.3702) \\
 & 0.000003X_6 - 0.000039X_7 - 0.000017X_8 + e_i. \\
 & (2.0759) \quad (-2.1071) \quad (-5.2965)
 \end{aligned}$$

**Note:** The values in parenthesis are the corresponding t-values.

$$(R^2 = 91\% \text{ R(adj)} = 90\%, F = 67.96, DF = 59)$$

These parameters relate to profit ( $X_2$ ), total revenue ( $X_6$ ) transportation cost ( $X_7$ ) and shop-rent ( $X_3$ ) which were the major parameters of interest in the study. The  $R^2$  was the coefficient of multiple determinations which measures the extent to which the variation in the dependent variable is explained by the repressors. The  $R^2$  adjusted measures the Goodness of fit to the model. The F statistic measures the joint impact of the repressors on the regress and, thus, testing the joint significance of the model. The  $R^2$  of 0.91 show that 91% of the changes of dependent variable MAPs marketing was jointly explained by the independent variable captured in the model. At this point the result of the Statistical significance of the individual explanatory variables in the model are discussed as follows:

#### **Gender ( $X_1$ )**

The result from the analysis showed that the genders of major marketers are not statistically significance in affecting the efficiency of marketing of MAPs. However there exist positive relationships. This means that any person male or female could be efficient in MAPs marketing.

#### **Profit ( $X_2$ )**

The result from the analysis shows that the profit was statistically significance in affecting the marketing efficiency at 1% level of significance. This implies that the profit is a major determinant factor of the marketing efficiency. Furthermore, a positive relationship existed between the profit and marketing efficiency. That is, the higher the profit, the higher the marketing efficiency.

#### **Level of Education ( $X_3$ )**

The result from the analysis shows that the level of education of the marketer was not statistically significant in affecting the efficiency of marketing of MAPSs. However it shows that there is a positive relationship between educational attainment and MAPs marketing efficiency.

#### **Quantity of MAPs Traded ( $X_4$ )**

The result of the study shows that the quantity of MAPs traded is not statistically significant in affecting the marketing efficiency of MAPs, however the negative relationship between the quantity of MAPs traded and the marketing efficiency, implies that the higher the quantity traded the smaller will be the marketing efficiency of MAPs. This is not in conformity with the rational economic principles. Olukosi; Isitor and Ode (2007) had earlier noted that

the higher the quantity traded and profit, the higher the marketing efficiency

#### **Total Revenue ( $X_6$ )**

The total revenue of MAPs products, due to the result from the analysis shows that it was statistically significant in affecting the marketing efficiency of MAPs at 1% level of significant. This variable turned out to be a major determining factor of MAPs marketing efficiency in the study area. The positive signs associated with the variable in the model imply that, as total revenue increases, profit also increases as well as the marketing efficiency. Akirga (2006) had earlier noted that increase in revenue would create an in cease in profitability.

#### **Transportation cost ( $X_7$ )**

Transportation cost to the nearest MAPs market was selected as a proxy for market access condition and cost associated with MAPs marketing in the study area. This variable turned out to be a significant debarminant of MAPs marketing in the study area. The negative sign associated with the variable in the model implies that a high transportation cost would reduce the quantity of MAPs a marketer would purchase, hence reducing the profit and the marketing efficiency. But a better market access would reduce the transportation cost to MAPs marketers. Olapade, (1995) had earlier noted that a better market access would create a wide scope of medicinal and aromatic plants (MAPs).

#### **Shop-Rent ( $X_8$ )**

The shop rent turned out to be one the significant determinants of MAPs marketing efficiency among marketer's in the study area: The coefficient of this variable was negative which implies that as the shop rent reduces, there will always be an increase in profit. This will translate to an increase in marketing efficiency. Thus low cost of shop rent encourages more marketers to want to go into the business of MAPs marketing in the study area. The result of the study shows that the most prevalent socio-economic problem facing medicinal and aromatic plant (MAPs) in the study area, were lack of credit (100%) price of MAPs (100%). These constraints are enough to discourage many participants, especially the resource poor dealers. This result agrees with the report of Akirga, (2006) that the promotion of marketing would depends on operating capital, which is needed all though MAPs marketing systems. The next socio-economic constrains were high cost of transportation (97%), inadequate MAPs gatherer (97%), low turnover rate (88%) and low profitability (88%). This agrees with the observation of Akirga, (2006) when he asserted that there are cases of defective market access condition. Other socio-economics problem affecting MAPs marketing as identified in the study were poor road network (86%) and rate of spoilage (83%).

**CONCLUSION**

The marketing of medicinal and aromatic plant (MAPs) is important in the economy of Delta state. This is because it provides means of livelihood and trade services to the people. Its empirical investigation has indicated that it is profitable to all the market participants in the study area; although various medicinal and aromatic plants attract different profit levels to the marketers. On the whole MAPs If the constraints are taken care of, there will be improvement in the marketing efficiency of MAPs in the study area. This study on MAPs marketing has expanded the frontier of agriculture marketing literature in Delta State. Other medicinal and aromatic plants not captured in this study should form the focus of further investigation in this area.

**RECOMMENDATIONS**

Based the findings of the study, the following recommendation were made:

1. MAPs should be as a mean of safe and effective health care to fulfill the primary health care need of rural poor and use.
2. Network should be promoted at all levels among key actors involved in MAPs. The goal is to increase the exchange of information, collaboration and coordination activities.
- 3 Government should influence both national and local policies and their timely and suitable reforms, institutional mechanisms that can provide more incentives for conservation, cultivation of medicinal and aromatic plants.

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## APPENDIX

**Table 2. Summary Statistics of Marketing Parameters**

Medicinal and aromatic plant (MAPs)	Unit Per Price(N/kg)	Quantity Traded (kg)	Total (TC) cost (N)	Total (TR) Revenue(n)	Profit(n)	Market efficiency (ME)
Ginger	90	1,519.50	156,260	176,500	20,240	1.13
Garlic	100	2,502.00	379,650	466,000	86,350	1.23
Bitter cola	100	1,946.00	217,010	257,300	40,000	1.19
Guinea Corn Leaf	50	544.00	38,680	55,850	17,170	1.44
Chloroquine stick	110	360.00	51,930	64,900	12,970	1.25
Manpower stick	100	355.00	48,660	59,200	10,540	1.22

**Table 3. Profitability of MAP products**

MAPs Products	Profit (N)	Profit/Unit
1. Ginger	20,240	No.08
2. Garlic	86,350	N34.51
3. Bitter cola	40,000	N20.55
4. Chloroquine stick	17,170	N46.69
5. Guinea Corn leaf	12,970	N23.84
6. Manpower	10,540	N29.69

Survey: Field survey (2009)

From the above table (4.3) of profitability of MAPs product in the study are, N350; Bitter cola—N40,000; Chloquine stick 17170; Guinea corn leaf N12,970; and manpower stick N10,540 and it was observed that the aromatic plants were

more profitable garlic has the highest profit. From the above table (4.3) it was also observed that in term of profit per unit, choloquine stick has the highest profit.

**Table 4: summary statistics of Profitability in the marketing of MAPs**

Statistics	Profit (N)
Mean	3372.833
Standard	998.8548
Median	510.00
Range	7737.096
Minimum	46140.00
Maximum	110.00
Standard Deviation	46250.00
Sum	202370.00
Count	60

From the table (94.3.1) above, summary statistic of profitability in the marketing of MAPs, the profit accrued able to the MAPs marketers in the study

area were as follows; mean profit N3372.33, minimum profit 110 and maximum profit N 4620.

**Table 5. Socio-Economics Constraints to MAPs Marketing in the study**

Socio-economic Constrains	No of observation	Percentage
Lack of credit	60	100
Price of MAPs	60	100
Inadequate facilities for preservation	60	100
Poor road network	52	86
High Cost of transportation	58	97
Low turnover rate	53	88
Low profitability	53	88
Rate of Spoilage	50	83
Inadequate MAPs Gatherers	58	97

Multiple responses were recorded (Sources: Field Data)