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# Consumption Pattern and Demand Analysis of *Monodora myristica* in Umuahia Metropolis

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**Abstract**

This study was carried out to analyze the demand and consumption pattern of *Monodora myristica* . The scope of the study covered Umuahia metropolis comprising Umuahia North and South Local Government Areas. Information was obtained with structured questionnaire from 120 respondents within the study area. Data were analyzed with descriptive statistics, regression and correlation analysis. Descriptive statistics showed that almost all the respondents (100%) consume *M. myristica*. About 98 % of the respondents were satisfied with and ready to maintain their current level of consumption irrespective of any change in price. The multiple regression result and Pearson correlation coefficient showed that household size and willingness to buy more *M. myristica* were statistically strong significant determinants/factors for the demand and consumption of *M. myristica*. Good processing and better packaging could add more value to *M. myristica*.

Keywords – Demand, Consumption pattern, *Monodora myristica*,Willingness to buy, Umuahia.

## Introduction

Plants are primary sources of medicines, fibre, food, shelter and other items of everyday use by humans. The roots, stems, leaves, flowers, fruit and seeds provide food for animals and human beings (Hemingway, 2004). Plants serve as indispensable constituents of human diet supplying the body with mineral salts, vitamins and certain hormone precursors in addition to protein and energy (Oyenuga and Fetuga, 1975). Seeds have nutritive and calorific values which make them necessary in diets (Odoemelam, 2005). Among these plant seeds are the seed of *Monodora myristica* popularly known as African nutmeg. The kernel obtained from the seeds is a popular condiment used as a spicing agent in both African and continental cuisines in Nigeria. They are aromatic and are used after grinding to a powder as a condiment in food providing flavor. The seed called ehuru or ehiri by the Igbos or abo-lakoshe in Yoruba are economically and medicinally important (Okafor, 1987; Okigbo, 1977). Oboh and Ekperigin,( 2004) submitted that the seeds of *M. myristica* contain about 6.5 – 24.2 percent protein, 19.0-58.5 fat, minerals like Mg, Fe, Zu, Mn, Ca, Na, P and K. 1043.6 – 2905.2 mg phytate per 100g samples and cyanide (3.7-6.4mg/kg).

Consumption is an act of buying and making use of what you buy as quickly as possible before purchasing another one. According to Robinson (1972), demand is the functional relationship between the price of a given commodity and the quantity of that commodity that will be sold in a market specified as to time and place. Also according to Jhingan (2002), demand in its ordinary meaning means desire but it becomes effective when income is spent in buying consumption and investment goods. The essence of the study of demand in economics is to describe the behaviour of consumers. Adegeye and Dittoh (1985) defined demand as a schedule which shows the various amount of a product which consumers are willing to buy and able to purchase at every specific price in a series of time. Demand is classified into individual and market demand. Individual demand is the schedule which shows the various amount of a product which a consumer is willing and able to buy within a particular period of time in a series of possible prices, while a market demand schedule in a particular market can be accomplished by summing the quantities demanded by each consumer at the various possible prices to give the total demand schedule in a particular market(McConnell 1990).Koutsoyiannis,(1979) also defined the

market demand for a given commodity as the horizontal summation of the individual consumers. Demand is a multivariate relationship, that is, it is determined by many variables simultaneously. Basically the most important determinants of the market demand are considered to be the prices of the commodity in question, the price of other commodities, consumers income, number of consumers in the market, consumers expectation with respect to future prices and income. Keynes in his "General Theory" postulated that aggregate consumption is a function of aggregate disposable income. The relation between consumption and income is based on his psychological law of consumption which states that when income increases, consumption expenditure also increases but by a smaller amount.In other words,the consumption expenditure increases(or decreases)with increase(or decrease)in income but non-proportionally.

The aim of this study is to determine the factors responsible for the consumption of *M. myristica* and also to determine the level of consumption and the various uses and reasons for consumption of *M.myristica*.

**Methodology**

The study was carried out in Umuahia metropolis. Umuahia is the capital of Abia State and is located on the Eastern part of Nigeria lying between latitude $5^oN$ and $7^oN$ of the equator, longitude $7^oE$ and $9^oE$ Greenwich meridian. It comprises of two local government areas (Umuahia North and South) with a total population of approximately 359,230. (NPC, 2006).

A simple random sampling was used in selecting 120 respondents with only 116 valid for analysis during data collection. The data were collected with structured questionnaires. Descriptive statistics (such as frequency and percentage)and multiple regression models(Linear regression models) were used to analyze the collected data . The model is stated thus:

$Yi = a + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5 + a_6X_6 + a_7X_7 + a_8X_8 + a_9X_9 + a_{10}X_{10} + Ui$

Where

Yi = Consumption of *M. myristica* (g)

$X_2$ = Sex of the respondent

$X_3$ = Age of the respondent (years)

$X_4$ = Educational qualification

$X_5$ = Martial status

$X_6$ = Profession

$X_7$ = Household size

$X_8$ = Reason for *M. myristica* consumption

$X_9$ = frequency of purchase

$X_{10}$ = willingness

$a = a_1, a_2 \ldots\ldots\ldots\ldots a_{10}$

U = error term.

**Results and Discussion**

*Socio-economic characteristics of the consumer*

The result (Table1) shows that 82.80 % of the respondents were female while 17.20% were males. This indicate that more women used *M. myristica* than males in the study area. The study showed that 69% were married, while 16.0% and 14.7% were single and widows respectively. This depict that the married used *M. myristica* more in cooking for their households. The result analysis showed that 60.30 % were traders. This shows that mostly married women who were traders fed this spice (*M.myristica*) to their family with an average household size of 1-4 being 46.60 %, 43.10% of these women were between ages 36 and 45 years. Their knowledge of the importance of this spice made them fed it to their families. 29.30% of the respondents had no formal education while 28.40 and 22.40 % had primary education and secondary education respectively. It was due to this low level of education that almost all the respondents (99%) had no record of their average annual income.

Table 1: Socio-Economic Characteristics Of Respondents

| Characteristics | Indicators | Frequency | Percentage (%) |
|---|---|---|---|
| Sex | Male | 20 | 17.20 |
| | Female | 96 | 82.80 |
| Age | 26-35 | 29 | 25.00 |
| | 36-45 | 50 | 43.10 |
| | 46 above | 37 | 31.90 |
| Tribe | Igbo | 116 | 100 |
| Marital status | Single | 19 | 16.40 |
| | Married | 80 | 69.00 |
| | Widowed | 17 | 14.70 |
| Edu. Qualification | No formal educ. | 34 | 29.30 |
| | Primary | 33 | 28.40 |
| | Secondary | 26 | 22.40 |
| | OND/NCE | 13 | 11.20 |
| | Graduate | 10 | 8.60 |
| Profession | Medical | 4 | 3.40 |
| | Teaching | 19 | 16.40 |
| | Farmer | 23 | 19.80 |
| | Traders | 19 | 60.30 |
| Household size | 1-4 | 54 | 46.60 |
| | 5-8 | 456 | 38.80 |
| | 9 above | 17 | 14.70 |
| Source of income | Farming | 2 | 1.70 |
| | None | 114 | 98.30 |
| | Total | 116 | 100 |

Source: field survey 2010.

*Consumption of M.myristica by the Respondents*

Table 2 shows that 25.20% of the respondents ate *M. myristica* due to sweetness, 8.70% because of flavor, 7.00% due to medicinal value and 59.10% because of all the three earlier mentioned reasons. 50.90% of the respondents claimed that they get information about *M. myristica* from friends and family. Some even claimed that their grandmother informed them about the spice. The result shows that 40.50% of the respondents purchased between one to five cups of *M. myristica* at a time monthly which costs about #300. About 96.50% of the respondents indicated that all members of their household ate *M. myristica.* This shows that *M. myristica* consumption cuts across age groups and 99.10% would buy the same quantity, irrespective of any price changes, which means that they were satisfied with their current level of consumption and so the demand for *M.myristica* is likely to be perfectly inelastic. The consumption is associated mostly with friends and family choice. This is also evident in the fact that various tribes / ethnic group in Nigeria and West Africa have different names for *M. myristica* which has market (44.80%) and village (40.50%) as its main source of purchase. Some women claimed that they buy from Cameroon and Benin Republic to Umuahia, which makes the spice to be available all the time.

*Factors affecting M. myristica consumption pattern*

The consumption pattern and demand of *M. myristica* in Umuahia metropolis according to survey and result obtained from Table 3 shows that socioeconomic variables like sex with test statistic 0.48, educational qualification (0.95) at 5% level are statistically insignificant to the consumption pattern of the spice, while variables like age (-0.37), marital status (-0.56) Reason for consumption of spice (-1.11) are highly insignificant to the consumption pattern of the spice, the other variables tested with like profession (1.14); household size (2.78), how often one buy the spice (1.63) are all statistically significant and the willingness to buy more spice with test statistics 7.02 is highly significant to the consumption pattern of the spice.

Table 2: Consumption Level of *M.myristica* by the Respondents

| | Indicators | Frequency | Percentage (%) |
|---|---|---|---|
| Consumption | Yes | 116 | 100 |
| Reasons for consumption | Sweetness | 29 | 25.20 |
| | Flavor | 10 | 8.70 |
| | Medicinal value | 8 | 7.00 |
| | All of the above | 68 | 59.10 |
| Source of information | Medicinal personnel | 16 | 13.80 |
| | Friends / family | 59 | 50.90 |
| | Personal likeness/ choice | 2 | 1.70 |
| | All of the above | 39 | 33.60 |
| Frequency of purchase | Monthly | 47 | 40.50 |
| | Weekly | 26 | 22.40 |
| | Occasionally | 21 | 18.10 |
| | Often | 5 | 4.30 |
| | When needed | 17 | 14.70 |
| Quantity purchased at atime | < 1 cup | 1 | 0.85 |
| | 1 cup | 3 | 2.61 |
| | 2 cups | 2 | 1.72 |
| | 3 cups | 28 | 24.20 |
| | 4 cups | 23 | 19.80 |
| | 5 cups | 55 | 47.40 |
| | Others | 4 | 3.50 |
| Willingness to buy more spice | Yes | 115 | 99.10 |
| | No | 1 | 9 |
| | Total | 116 | 100 |
| Willingness to buy at increased price | Yes | 114 | 99.10 |
| | No | 1 | 9 |
| Willingness to buy more at reduced price | Yes | 116 | 100 |
| Household member that consume monodora | Some | 3 | 2.60 |
| | None | 1 | 0.85 |
| | Every member | 112 | 96.55 |
| Source of spice | Market | 52 | 44.80 |
| | Farm field | 4 | 3.40 |
| | Village | 47 | 40.50 |
| | Retailers | 13 | 11.20 |

Source: field survey 2010.

*Relationship between socioeconomic status and consumption pattern*

Table 4 shows that socioeconomic variables like sex with correlation coefficient of 0.07, age (0.06), educational qualification (0.08), profession (0.11), marital status (0.01), source of information about Monodora (0.07) source of spice (0.03) all have a very weak positive correlation with the demand / consumption pattern of the spice while household size (0.23) has a weak correlation and willingness to buy more spice with a coefficient of 0.57 at 5 percent significance level is poorly correlated. This shows that there is no strong relation between the consumption pattern of the spice *M. myristica* and the socioeconomic variables mentioned above. It thus means that the relationship of demand / consumption pattern of *M. myristica* is positive with some of the variable and statistically significant and also negative with some variables and statistically insignificant.

The regression model does not explain very well the variation of consumption pattern with the change in some of the variables, the $r^2$ is about 0.41 which is a low value considering that $r^2$ can be at most 1. From the regression model change in the willingness to buy more spice pattern bring about 92.60% change in the pattern of consumption or demand of the spice *Monodora myristica.*

Generally change in other variables that are positively related to the spice will lead to an insignificant change in the consumption pattern / demand of the spice. Thus it can be consolidated that change in some socioeconomic variable will bring about less proportional change in the demand/consumption pattern of the spice *Monodora myristica* in the Umuahia metropolis.

From Table 3, the sigma value shows that the whole model is significant. Household size and willingness to buy more *M. myristica* were statistically significant. The intercept was – 0.08 and implies that when all other independent variables are zero the consumption of *M.myristica* will be negative and this represents the consumption of the household it is significant to the demand and consumption of *M.myristica,*yet the regression coefficient which is 0.06 depict the weak relationship between the demand and consumption of monodora and household size in Umuahia metropolis. In the case of willingness to buy more monodora, its test statistic (7.02) shows that it is very significant and its regression coefficient (0.93) shows that it has a very strong relationship with the demand and consumption of monodora in Umuahia Metropolis.

From Table 4, the result of the correlation shows that household size is significant (r = 0.23) at 5% while willingness to buy more *M,myristica* is highly significant (r = 0.57) at 1% to the consumption of *M.myristica.*

Table 3: Factors Affecting Demand and Consumption of *M.myristica* In Umuahia

| Variable | Coefficient | T-test statistic |
|---|---|---|
| Constant | -0.08 | -0.45 |
| Sex | 0.02 | 0.48 |
| Age | 0.01 | -0.37 |
| Education | 0.01 | 0.95 |
| Marital status | -0.02 | -0.56 |
| Profession | 0.17 | 1.14 |
| Household size | 0.06 | 2.78 |
| Reasons for consumption of monodora | -0.01 | 1.11 |
| Frequency of purchase | 0.01 | 1.63 |
| Willingness to buy more monodora | 0.93 | 7.02 |
| Sigma | 0.93 | 11.49 |

Dependent variable: consumption of spice

Table 4: Pearson Correlation Showing the Relationship between Socio-Economic Status and Consumption Of *M.myristica*

| Socio economic factor | Pearson coefficient |
|---|---|
| Sex | 0.07ns |
| Age | 0.08ns |
| Education | 0.08ns |
| Marital status | 0.01ns |
| Profession | 0.11ns |
| Household size | 0.23* |
| Reasons for consumption | -0.16 |
| Source of information | 0.07ns |
| Willingness | 0.57** |

*-significant at 5%; **-significant at 1%; ns-not significant

**Conclusion and Recommendation**

The consumption pattern and demand of *M. myristica* in Umuahia metropolis was investigated and the result showed that the household size and willingness to buy more *M.myristica* are positively related to the demand for *M.myristica* by households. It was also discovered that people consume the spice because of its sweetness, flavor and medicinal value. To make ehiri more appealing to end users, it is suggested that better packaging and processing method should be designed for *M.myristica* More studies should be carried out on how to improve the procession of *M.myristica* and better packaging for marketing. It is also recommended that Forestry Research Institute of Nigeria should perfect research on the propagation and mass production of this species to reduce importation from the neighbouring countries.

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