

## **Economic Analysis of Snail Meat Consumption In Ibarapa Central Local Government Area of Oyo State**

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### **Abstract**

The study investigates consumption of snail meat in Ibarapa Central Local Government Area of Oyo State using both descriptive statistics and OLS multiple regression techniques. Questions that were addressed by the study include: first, what is the rate of consumption of the snail meat in the study area? Secondly, what are the determinants of amount spent on the consumption of snail meat? For the above purpose, cross sectional data were collected from 80 households of the study area through the use of structured questionnaires and oral interview and analyzed to reveal the functional relationship between the consumption of snail meat and some socio-economic characteristics of the respondents. Results indicated that most of the respondents were female, married, between 30 and 39 years and have formal education. Also it was found that most respondents earned between N5, 000 and N9, 999 as income monthly. Quantity (number of snails) of snail meat consumed was found to be high but rate or frequency (number of times) of consumption was low (seasonally). The study found no significant relationship between gender, marital status, age, education and income and consumption level (quantity) of snail meat consumed. However, significant relationship was found between rate (frequency) of snail meat consumption and age, educational level and income. The findings also revealed that apart from income, occupation, price of substitutes and education which were the major determinants of snail meat consumption, the nutritional benefit and taste of snail meat were also important factors that determined its consumption by respondents. It was also found out that majority of snail meat eaters sourced it through traditional hunting while only few people bought it from snail rearers. It is therefore recommended that, more people (especially youths) should go into snail production, since it is easy and cheap to rear because this will not only generate employment opportunities but also ensure all year round availability of the product and thereby make it more affordable for the low income earners. Also Agricultural extension workers in the area should intensify awareness about nutritional and medicinal benefits of snail meat and the need for the people of the area to embrace its consumption.

**Keywords:** Snail meat, Regression, Consumption

### **1. Introduction**

Over the time, Food and Agriculture Organization (FAO) has reported that the average animal protein intake in Nigeria is low, calling for concerted efforts towards alleviating this crisis of protein shortage. Unfortunately the conventional and regular sources of animal protein in the country like beef, pork, goat meat, fish, poultry etc are getting out of the reach of common populace due to their high price as a result of the economic down-turn (Olayide, 2004). Also, Wufueke (2004) reported that the consumption of animal protein in Nigeria is 5.5kg per head per day which is absolutely below the Food and Agriculture Organization recommendation of 35kg per head per day.

To bridge this gap, various non-conventional animal protein sources like snail, cricket, and winged termite are now being explored. Snail meat, (also known as Congo meat) is reported to be high in protein, low in fat, and a source of iron (Ademoluet.al, 2004). Though snails are gathered from the forest, they are also produced through snail farming (heliculture).

Snail is a small soft creature with a hard shell on its back that moves very slowly and often eats garden plants. Snails are the largest groups of mollusks constituting the largest animal groups after arthropods (Yoloye, 2002). Land snails habitat ranges from the dense tropical high forest in southern Nigeria to the fringing riparian forests of the derived guinea savanna (Odaibo, 1997).

Traditionally, rural folk scout freely in the forest and farm lands to collect snails during the raining season for sales and for domestic consumption. Snail is also highly adaptable to a variety of conditions (Villages, farms, backyard, shed.) (Mafemi, 2010), but the production of snail has not been able to keep pace with its demand as a result of different environmental and technical factors implicated (Oben, 2008). Snails are efficient producers of meat; they have high medicinal value, hence, its usage in curing cancer. They are also used in prevention and curing of diseases like hypertension, anaemia, and haemorrhoid and to restore vivility and vitality in men apart from its richness in nutritional value (Odunnaiya, 1991). In Nigeria, snail meat is now becoming a highly relished delicacy. In the local communities, snails are roasted or fried and garnished with spices and consumed with palm wine. They could however be taken with rice or in soups in place of meat or fish (Oben, 2008).

Many species of edible land snails are recognized in Nigeria but the popular species of economic interest in the West Africa are giant snails (*Archatinaarchatina*) and *Archachatinamarginata*. The recent study confirmed that

the two species of snails are good sources of protein, supporting the earlier reports by (Ademoluet.al, 2004 and Fagbuaroet.al, 2006).

However, in spite of the fact that snail meat is relatively high in protein, carbohydrate, calcium, potassium, magnesium and sodium, and relatively low in crude fibre, ash, fat, iron, zinc, phosphorus, phytate and soluble ocalateconcentrations(Odunnaiya, 1991), most consumers of meat products still did not consume it as alternative to conventional meat types or take it as an additional source of animal protein (Oyenuga, 2002). Studies on consumption of various meat products in various regions of Nigeria abound while those on snail meat are few or not available at all (Adeniyi, 2008). Also, the consumer's preferences for various meat products (beef, fish, pork and poultry) have been examined by Akinola, (2002); Idowu, (2004);Adeniyi, (2008); among others.

It is therefore necessary that this study be carried out to examine pattern of consumption of snail meat so as to provide reliable statistics and to stimulate further studies on it

## **2.Methodology**

### **2.1 Study Area**

The study was conducted in Ibarapa Central Local Government area of Oyo state. Ibarapa Central Local Government is made up of two major towns which are; Igboora and Idere. Igboora consists of six quarters (Igbole, Pako, Iberekodo, Saganu and Idofin.) while Idere consists of three quarters which are; Koso, Malete, and Okeoba. The study area has human population of about 102,979 according to 2006 population census (NPC 2006).

The area shares boundary with Ibarapa North Local Government Area in the North, Abeokuta Ogun State in the South and Ibarapa East and Benin Republic in the West and East respectively. The rainfall pattern of the area follows a tropical type with an average annual rainfall ranging from 1000mm to 1430mm and fairly high temperature. This also gives the area the opportunity to have two main planting season; the early season planting usually beginning from March and ends around July-August, while the late season occurring between September and ends around December.

The vegetation of the area is largely rainforest and savannah and this makes it possible to cultivate a wide array of crops ranging from tree crops to arable crops and rearing of different livestock.

### **2.2Sampling Size and Sampling Procedure**

A multistage random sampling technique was used to select a total of eighty respondents that formed the sample used.

At the first stage, systematic random sampling was used to select 10 residential buildings (using interval of 10) from each of (Igbole, Pako, Iberekodo, Saganu, Idofin, Koso, Malete, and Okeoba) community. Secondly, simple random sampling was used to select one household per each residential building to make a total of eighty respondents to which structured questionnaires were administered.

### **2.3Types of Data and Instrument of Data Collection**

Data used for this study consist of both primary and secondary data. Primary data was collected through the use of structured questionnaires and oral interview. While secondary data were sourced from such as; library, Local Government Secretariat, internet, journals, government office and the population census commission in the study area. The questionnaire was used to obtain data on socio-economic characteristics of the sampled household as well as household expenditure on snail meat.

### **2.4Method of Data Analysis**

Data obtained were analyzed using descriptive statistics and ordinary least squares multiple regression {OLSMR} technique. The descriptive statistics used include; measures of central tendency like mean, mode, frequency distribution and percentage.

Within the context of this study, a snail meat consumption model is implicitly stated as:  $C = f(X_1, X_2, X_3, X_4, X_5, X_6, e)$

Where  $C$  = |Amount spent on snail meat/ Quantity of snail meat consumed

$C$  = Rate of snail meat consumption

$X_1$  = Price of snail meat (₦)

$X_2$  = Level of education (no of years spent in school)

$X_3$  = Household size (no of persons)

$X_4$  = Household income (₦)

$X_5$  = Price of substitutes (₦)

$e$  = disturbance term.

## **3. Results and Discussion**

The socio-economic characteristics of the respondent households are presented in Table1 below. The socio-economic characteristics considered in the study include; age, sex of household head, household size, educational status, occupation of household head and income. Some of which were used in the regression analysis. The result of the analysis is based on effect of these factors as they affect consumption of snail meat.

The summary of the result shows that 43.7 percent of the respondents were males while 56.3% were females. This indicates that females are more than males and this has important effect on the consumption of snail meat because females are in most cases, household consumption decision makers. Also majority of the respondents were married (66.2 percent) and since marriage leads to increase in the number of people and this may reduce the quantity and quality of meat products that each individual member of the household will have access to if there is no corresponding increase in household income. It was also found out that 13.8% of the respondents household fell within age group 30 and 39 years. This implies that the middle age can consume any food items without proper consideration for its nutritional value. The declining in consumption of snail meat by the age group of 50 years and above may be due to lack of awareness as to medicinal value of snail meat in maintaining good health especially in adult. Majority of the respondents were farmers (56.2%) and therefore sourced their snail meat from traditional hunting method.

67% had household size 5-6, 26% had 3-4 while remaining 7% had 1-2 respectively. This implies that the more the number in the household the more the consumption level with a corresponding increase in income. Majority (47.5%) of the respondents earned ₦5000-₦9999, 16.2% of the respondents earned ₦1000-₦4999 and 22.7% earned ₦10000- ₦20000, 13.6% of the respondents earned above ₦20000. Consumption is a function of income. Income level determines the quantity and quality of food consumed by the households. Since majority of the respondents were low income earners this will negatively influence their consumption pattern and so they are likely to consume less of snail meat if they will have to buy it.

Also, nutritional factor and taste play prominent roles in household consumption pattern of snail meat. Easy to prepare had the least influence on the household consumption of snail meat. The result also indicated that 71.3% of the respondents consumed snail meat while 28.7% of the sampled households do not consume snail meat at all. While, about 50.0% of the respondents gave scarcity as a factor for not consuming snail meat, 23.8%, 18.7%, 5.0% and 2.5% gave price factor, cultural value and taboo respectively as factors hindering them from consuming snail meat. Majority of the respondents consume *A. marginata* (Igbina pinnu); about 26.3% of the respondents prefer *A. achatina* (Igbini lako) and while 10.0% consumed both *A. marginata* and *A. achatina*. Also the result shows that 48.7% and 33.7% of the respondents got their snail meat from farm and market while 6.3%, 2.5% and 6.3% of the respondents got their snail meat from cafeteria and beer parlour and about 6.3% of the respondents sourced their snail meat from both market and farm. On the form of snail meat eaten, majority of the respondents (62.4%) eat fried snail meat, about 21.3% eat roasted snail meat while 16.3% of the sampled household eats both cooked and fried snail meat. On how often the household consume snail meat; majority of the respondents (58.7%) eats snail meat seasonally, 27.5% occasionally, 12.5% monthly, and just 1.3% eats snail meat weekly while nobody eats it daily unlike beef and fish.

#### **4. Regression Analysis**

The regression results of Amount spent on snail meat as the dependent variable and other factors like; Age, Price of snail meat (₦), Level of education (no of years spent in school), Household size (no of persons), Household income (₦), Price of substitutes and occupation as independent variables is presented in the table 3 below.

The value of the adjusted ( $R^2$ ) of 55% indicated that the explanatory variables fitted explained 55% of variation in the dependent variable (snail meat consumption). The coefficient of Price is negatively significant at 5% level, indicating that an increase in price will lead to decrease in amount spent on snail meat and vice-versa. The coefficient of educational level is positive and significant at 10%, indicating that it is directly related to snail meat consumption. That is, increase in the level of education of respondents will make to be more conscious of the nutritive value of each food item and the need to consume a food item of higher nutritive value even if it demands paying higher price.

The coefficient of total income is found to be positive and significant at 5% level, indicating that the variable is directly related to snail meat consumption pattern i.e. an increase in the household income will cause an increase in consumption of snail meat.

Also, the price of substitute (beef and fish) is negatively significant at 1%, which implies indirect relationship with snail meat consumption.

#### **5. Conclusion**

The study reveals that among the socio-economic characteristics of household considered, income is the main determinant of consumption pattern of snail meat. Other factors are; education, sex, household size and occupation of the household head.

#### **6. Recommendations**

Snail meat consumption depends largely on income level, occupation and level of education. It is very important to bring about reduction in price of snail meat for low- income earners and people with low level of education to be able to eat snail meat as one of their sources of animal protein, in order to meet the protein level

requirement recommended by the Food and Agriculture Organization of United Nation. Also, because of the importance of animal protein in the diet of the households, the following recommendations are hereby put forward:

- i. Employment opportunities should be created for more people and also the purchasing power of the people should be improved adequately by paying them good wages in other to increase their income and there-by positively influence consumption of snail meat.
- ii. It is imperative for government to provide enabling environment that will encourage more people to venture into snail production and make already involved snail farmers to enlarge their production in other to reduce scarcity of snail meat as well as its price so that more people will be able to afford it.
- iii. Finally, there is need to create awareness through education and media promotion on nutritional benefits of snail meat and importance of protein such as in the prevention of diseases, body building and replacement of worn-out body tissues.

**Table 3.1 Distributions of the Household Head by their Socio-Economic Characteristics.**

Educational Level	Frequency	Percentage
No formal education	3	3.8
Primary	13	16.2
Junior Secondary	2	2.5
Secondary	19	23.7
Advance level	1	1.2
OND	10	12.5
NCE	5	6.3
HND	17	21.2
University Graduate	5	6.3
Total	80	100.0

Age group	Frequency	Percentage
20-29	29	36.2
30-39	34	42.5
40-49	11	13.8
50-59	4	5.0
Above 60	2	2.5
Total	80	100.0

Occupation	Frequency	Percentage
Farming	11	13.7
Artisan	18	22.5
Civil Servant	23	28.7
Trading	22	27.5
Unemployed	3	3.8
Contractor	3	3.8
Total	80	100.0

Household Size	Frequency	Percentage
1-2	23	28.7
3-4	31	38.7
5-6	20	25.0
7-8	5	6.3
9-11	1	1.3
Total	80	100.0

Household Monthly Income (₦)	Frequency	Percentage
1000-20000	13	16.2
21000-40000	22	27.5
41000-60000	17	21.5
61000-80000	18	22.5
81000-100000	5	6.3
101000-120000	3	3.8

121000-140000	2	2.5
Total	80	100.0

Gender		
Male	35	43.7
Female	45	56.3
Total	80	100.0

Marital Status	Frequency	Percentage
Single	19	23.7
Married	53	66.2
Divorced	5	6.3
Widowed	2	2.5
Widower	1	1.3
Total	80	100.0

Source: Field Survey 2011

**Table 3.2: Rate of Snail Meat Consumption by Household Head**

Snail Meat Consumption	Frequency	Percentage
Yes	57	71.3
No	23	28.7
Total	80	100.0

Determinants Factors		
Nutritious	47	58.7
Easy to prepare	1	1.3
Availability	2	2.5
Taste	24	30.0
Nutritious, taste	4	5.0
Nutritious, easy to prepare, taste	2	2.5
Total	80	100.0

Factor hinder		
Price factor	19	23.8
Scarcity	40	50.0
Cultural value	15	18.7
Taboo	4	5.0
Scarcity, cultural value	2	2.5
Total	80	100.0

Types of Snail Meat Consume		
Archachatnamarginata (Igbinipinnu)	51	63.7
Achatinaachatina (Igbinilako)	21	26.3
Both	8	10.0
Total	80	100.0

Source of Snail Meat		
Market	39	48.7
Farm	27	33.7
Cafeteria	2	2.5
Beer parlour	5	6.3
Rearing	2	2.5
Market, farm	5	6.3
Total	80	100.0

Form of Snail Meat Eaten		
Fried	47	58.7
Roasted	17	21.3
Cooked as stew	13	16.3

Fried, cooked	3	3.7
Total	80	100.0

  

How often of Snail Meat Consumed	Frequency	Percentage
Weekly	1	1.3
Monthly	10	12.5
Occasionally	22	27.5
Seasonally	47	58.7
Total	80	100.0

**Source: Field Survey, 2011.**

**Table 3.3: Regression Result for Snail Meat Consumption Pattern.**

	Coefficients	Standard Error	t- value
(constant)	95.94435	405.0098	0.24
X <sub>1</sub>	-16.4338	121.8175	1.95**
X <sub>2</sub>	-13.4338	101.8465	-1.83*
X <sub>3</sub>	-18.12237	15.09346	-1.65*
X <sub>4</sub>	43.0166	-.0021999	1.96**
X <sub>5</sub>	-18.4338	-186.4338	-1.69**

**Source: Computed from Field Survey, 2011.**

\*\*\*P (t>2.5), value significant at 1%

\*\*P (T 1.95-2.45) value is not significant at 5%

\*P (t<1.65-1.94) value is not significant at 10%

Adjusted R<sup>2</sup> = 0.556

F = 5.129

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