

FACTORS INFLUENCING THE DEMAND FOR FISH PROTEIN AMONG RURAL HOUSEHOLDS IN BAYELSA STATE, NIGERIA

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Abstract

The study highlighted the factors influencing the demand for fish protein among rural households in Bayelsa State, Nigeria. The study employed the simple random sampling technique in selecting 150 respondents. Data for the study were collected through the use of questionnaire and were analyzed using both descriptive and inferential statistic (multiple regression). The result of the study showed that the respondents were between the ages of 40 years. Moderate proportion (40%) of the rural farmers earn between N21,000- N30,000 monthly. On the various perceived problems that militated against demand for fish protein in rural households are: insufficient capital for investment in fish production ($x=4.3$) and polluted water bodies as a result of oil spill ($x=4.3$) were recognized as the problem rural household's encounter in pursuit to satisfy their dietary "fish protein" requirement. The multiple regression showed that price of fish protein positively influenced its demand (2.20%; $p<0.05$). The paper concluded that the demand for fish protein among rural households was influenced by insufficient capital. The study recommended that Government and multinational oil companies operating in the rural areas should provide credit facilities to the fish farmers in the state so as to ensure the availability of fish protein among the rural households and, also, due to the in-availability of land for establishing fish farms in the rural areas.

Keywords: Factors, demand, fish protein and rural households

Introduction

Fish is one of the aquatic organisms that is highly needed in the dietary of man due to its high quality protein and other essential nutrients such as vitamins and minerals like potassium,

phosphorus, sodium, iron, zinc, maniac, riboflavin and thiamine. Fish is widely acceptable because of its low cholesterol, tender flesh and high palatability (Eyo, 2000). Fish protein is a product of fish farming which has remained an essential component of the agricultural sector in Nigeria. Nigerian fishery sector alone contributes half of the animal protein intake of its population while the fish sub-sector to the Nigerian economy is not only derived from its substantial contribution to the Gross Domestic Product (GDP), but also its supply of fish protein of value in human nutrition (Ebewore and Idoge, 2013).

According to Food and Agricultural Organization (FAO) recommendation, an average of 35gram fish protein intake per day for a healthy person living in developing countries like Nigeria determines the general well-being of the people, with annual per capita fish protein consumption, is expected at an average of 44kg calories by the year 2050 (Omolaran, 2004; Thornton, 2010). However, global demand for dietary fish protein is rapidly increasing, largely due to increased prosperity and urban population growth in developing economies. Chikwendu, and Iwuanyanwu, (2001) and Dave (2003) affirmed that World demand for fish protein has also risen sharply during the last few decades due to increase in population, improvement in technology and increase in incomes. Regmi (2007) in his study noted that the unprecedented population growth that has occurred in the last half of the century has created an additional demand for fish protein and general food in developing countries. In other words, one of the key reasons for the increase in fish protein demand is the increasing population. For instance, Nigerians consume a total of 1.2 million metric tons of fish (Oruonye, 2014). This consumption rate has brought in a lot of improved technologies to the industry. Despite the overall improvement in technologies and incomes, human beings still lagged behind as per capita consumption of fish protein especially in the less-developed countries of the world like Nigeria because fish protein is the most costly food item (Osho and Asghar, 2004). According to Rosegrant, Cline, Li, Sulser, and Valmonte-Santos (2005) the projected consumption for fish protein as a whole is expected to be more than double between 1997 and 2025 from 5.5 to 13.3 million tons in Africa. Unfortunately, fish protein demand in Nigeria is very low at a level of 25g per day and the demand is even lower especially in the Eastern parts of Nigeria where production of fish protein has not been high enough to meet the demands of a rapidly growing population (Obi, 2003). However, with all the laudable agricultural intervention by Government in the rural areas, the extent of ascertaining the various factors influencing demand for fish protein is apparently unknown.

The specific objectives were to;

- i. describe selected socio-economic characteristics of the respondents in the study area

- ii. ascertain the perceived problems militating against demand for fish protein in the study area
- iii. examine factors influencing the demand of fish protein in rural households in the study area.

Methodology

The study was carried-out in Bayelsa State. Bayelsa State comprises eight Local Government Areas, namely: Brass, Ekeremor, Kolokuma/Opukuma, Nembe, Sagbama, Southern Ijaw, Ogbia and Yenagoa Local Government Areas. The State is geographically located within latitude 040 15' North, 050 22' West and 060 45' East. It shares boundaries with Delta State on the North, River State on the East and the Atlantic Ocean on the West and South. Bayelsa State lies in the heaviest rainfall area in Nigeria, with heavy rain forest and short dry season from November to March (National Population Commission, 2006). Purposive simple random sampling technique was employed to select Three local Government Areas namely:- Ekeremor, Sagbama and Yenagoa due to their contributions to fish farming. On the other hand, five communities were randomly selected from each of the local government area to give a total of 15 communities. The communities sampled were: In Ekeremor local government area: Aleibiri, Amalka-Izon, Oboloseria, Lalagbene, and Angala weigbene; Sagbama local governments were: Elemebiri, Angalabiri, Sagbama, Toru-Orua and Odoni while, Yenagoa local government area: Opolo, Agudama-Epie, Kpansia, Igbogene and Tombia which gave us a total of 15 communities. Ten respondents were randomly selected from each of the aforementioned communities giving a sample size of 150 respondents.

Objective 1 and 2 were realized using descriptive statistical tool such as frequency, percentages and mean scores. Multiple regression analysis was used to analyze objective 3 using animal protein demand function modified from Adetunji and Adepoju (2011); Iyangbe and Orewa (2009) stated as:

$$D_{ik} = f(X_1, X_2, X_3, X_4, e_i) \text{ -----}$$

(1.0)

Where;

i = 2 refers to fish; k= household type (k= farming households).

D_{ik} = Monthly expenditure on fish protein type (Naira)

X_1 = Price fish protein (Naira/g)

X_2 = Age of the household head (years)

X_3 = Number of years the household head spent in school (years)

X_4 = Total expenditure on food per month (including animal protein in Naira)

e_i = error term

Results and Discussion

Socio economics characteristics of farmers

Result in Table1 shows that 40.0% of the rural farmers are located within the age bracket 40-50 years. This result is in consonance with the findings of Nwosu and Okringbo (2016a) who stated that farmers within these ages are energetic and innovative. The result also shows that majority 53.3% of the farmers have a household size ranging between 1-4 persons. However, 40% of the respondents were fish farmers. This situation is understandable, considering the fact that Bayelsa State is predominantly a riverine area with the attendant potential opportunities in aquaculture (Nwosu and Okringbo, 2016b). Furthermore, the result finding further show that 40.0% of the rural farmers earn between N21, 000 – N30, 000 monthly. This implies that individual household requirement demand for fish protein will be at the minimal level.

Table 1: Distribution according to Socio-economic Characteristics of farmers

Variables	Frequency	Percentage
Age		
20-30	30	20.0
31-40	45	30.0
40-50	60	40.0
51 and above	15	10.0
Household size		
1-4	80	53.3
5-8	40	26.7
9 and above	30	20
Educational status		
No formal education	25	16.7
Primary education	45	30.0
Secondary education	65	43.3
Tertiary education	15	10.0
Occupation		
Fishing farming	60	40.0
Civil Servant	50	33.3
Others	40	26.7
Monthly income (₦)		
21,000-30,000	60	40.0
31,000-40,000	55	36.7
Above 40,000	35	23.3
Farm size		
<0.5-0.99	69	46.0
1-2ha	61	40.7
3-4ha	20	13

Source: Field survey, 2017

Perceived problems militating against demand for fish protein

The perceived problems militating against demand for fish protein in the study area. From Table 2 below, insufficient capital for investment in fish production (\bar{x} =4.3), high cost of fish protein(\bar{x} =4.3),low production of fish that makes fish protein products scarce (\bar{x} =4.3), government flux (\bar{x} =4.3), polluted water bodies as a result of oil spill (\bar{x} =4.3), and lack of improved technology showed (\bar{x} =4.3). Others include: poverty among low Income households(\bar{x} 4.2),non-availability of land for establishing fish farms (\bar{x} =4.2), , urbanization (\bar{x} =4.1); lack of extension agents (\bar{x} =4.1), and farmers' variation in production of fish (\bar{x} =3.1). This implies that rural farmers in Bayelsa state were influenced by some of these factors in their demand for fish protein. This confirm the assertion of (Osho and Asghar, 2004)which states that despite the overall improvement in technologies and incomes, per capita consumption of fish protein has lagged behind especially in the less-developed countries of the world like Nigeria because fish protein is the most costly food item.

Table2: Perceived problems that militate against demand for fish protein in the study area

Problems	Scores (N =150)					Total Score	Mean Score
	SA	A	U	D	SD		
Insufficient capital for investment in fish production	50	93	5	1	1	639	4.3
Squat nutritional knowledge	10	30	10	50	50	350	2.3
High cost of fish protein	50	89	11	0	0	639	4.3
Low Production of fish that makes fish protein products scarce	66	70	13	1	0	650	4.3
Government flux	57	78	13	0	2	638	4.3
Polluted water bodies as a result of oil spill	59	78	11	0	2	642	4.3
Poverty among low income households	47	90	10	1	2	628	4.2
Lack of improved technology	62	78	6	1	3	644	4.3
Lack of extension agents	35	103	10	0	2	619	4.1
Lack of fish farming experience	15	40	8	70	17	416	2.8
Farmers variation in production of fish	20	70	10	20	10	460	3.1
Non-Availability of land for establishing fish farms	49	92	7	1	1	636	4.2
Urbanization	39	98	11	1	1	622	4.1
Grand Mean							3.9

Source: Field survey, 2017

Note: SA= Strongly Agree, A = Disagree, U= Undecided, D=Disagree and SD = Strongly Disagree.

Factors affecting demand of fish in the study area

Multiple regression result for the demand of fish among farming households in the study area is shown in Table 3. The linear function was chosen as the lead equation based on the value of the R², F-ratio the numbers and signs of significant variables. R² value is 0.722 implying 72.2% variability in fish demand was explained by the independent variables. The F-value (17.103) was highly significant at 1% level of probability indicated a regression of best fit. The coefficient of price fish protein (0.105) was significant at 5% demand level with a positive sign implying that the higher the price of fish protein, the higher the total expenditure on non-animal protein food items. This is in compliance with the findings of Joseph (2004) who establish that increase in household size lead to increase in expenditure.

Table 3: Regression analysis on selected socio-economic factors that affect the demand of fish among rural households

Variables	Linear+	Exponential	Double-log	Semi-log
Constant	-3.340 (-5.298)***	-5368.693 (-1.940)*	-1018.0 (-1.433)	-8.138 (-23.349)***
Price of fish protein	0.105 (2.248)**	157.653 (0.579)	0.024 (0.484)	0.000 (0.447)
Age of members of household	0.123 (1.483)	-508.920 (-1.262)	-10.660 (-1.096)	-0.004 (-0.927)
Household size	3.210 (2.484)**	159.689 (0.549)	39.895 (0.524)	0.008 (2.330)**
Educational level	0.195 (1.105)	-48.163 (-0.234)	7.130 (0.343)	0.003 (0.232)
Total expenditure on non-animal protein food items	-2.041 (-0.874)	-155.527 (-0.452)	-0.122 (-0.277)	0.000 (-0.335)
Total expenditure on food	1.989 (2.198)**	396.421 (2.327)**	0.037 (0.858)	0.000 (0.816)
R ²	0.722	0.644	0.702	0.504
Adj.R ²	0.718	0.553	0.500	0.500
F-statistic	17.103***	7.021	5.869***	5.631

Source: field survey, 2017 P= 0.05

Conclusion and Recommendations

From the results obtained in the study, it can be concluded that factors influencing fish protein demand among rural farmers are insufficient capital, high cost of fish protein, low production of fish that makes fish protein products scare, government flux, polluted water bodies as a result of oil spill, poverty among low income households and non-availability of land for establishing fish farms. Rural farmers were mainly middle aged men and women with mean age of 40-50 years and they are married with an average household size of 4 and not many of them interviewed were educated with tertiary education.

Based on the findings of the study, the following recommendations were made:

- i. There is need for government and multinational oil companies operating in the rural areas to provide credit facilities to the fish farmers in the state so as to ensure the availability of fish protein among the rural households
- ii. Due to the in-availability of land for establishing fish farms in the rural areas, farmers should be encouraged to maximize their productive lands.

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