

## EFFECTS OF OIL SPILLAGE ON HOUSEHOLD FOOD SECURITY AMONG RURAL FARMERS IN BAYELSA STATE, NIGERIA

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### ABSTRACT

The study assessed the effect of oil spillage on household food security among rural farmers in Bayelsa State, Nigeria. Data were collected through the use of structured questionnaire. Three Local Government Areas mostly affected by oil spillage in Bayelsa State, namely Ogbia, Yenegoa and Nembe were purposively selected for the study. Twelve communities from the three Local Government Areas were randomly selected for the study. One hundred and twenty (120) respondents were also randomly selected from the twelve communities for the study. Data collected were analyzed through the use of both simple descriptive statistics such as percentages, frequencies and means as well as simple regression model. The results revealed that the farmers were marginally dominated by the females (50.8%). Majority of the farmers (78.7%) were educated. A high proportion (53.3%) of the respondents were into fishing as a primary occupation. Similarly, a majority of the respondents (65.0%) earned an average of between ₦15,501.00 and ₦18,500.00 per month. The results of the linear regression analysis revealed that the coefficients of determinations ( $r^2$ ) of the dependent variables i.e food consumption expenditure, farmers' farm finance, sufficiency of food supply, food safety and food availability were 0.707; 0.706; 0.632; 0.717 and 0.717 respectively and were significant at 1% level. The results confirmed that there was a negative relationship between oil spillage and sufficiency of food supply, food availability, food consumption expenditure and food safety. As palliative measures to the consequences of oil spillage, it is suggested that the government should set up strategic food reserves in the study area. Oil drilling companies should be made, through legislation, to put in check measures aimed at curtailing/controlling the effects of oil spillage in the study area.

**Keywords:** Oil spillage, Household Food security, Rural farmers.

### Introduction

Over the years, oil spillage has remained a potential environmental hazard in the Niger Delta region of Nigeria. Emuedo and Emuedo (2014), have explained that because of the careless nature of oil operations in the Niger Delta region, the environment is growing increasingly uninhabitable. Due to the operations of the oil industry, the agricultural land and waters have been greatly polluted and degraded, thereby affecting their farming and livelihood activities (Nwachukwu and

Ekanem, 2016). Constant exploitation of oil within the region has posed huge environmental threat to the people of the region as important fishing grounds and vast expanse of agricultural farmlands are readily destroyed. Among other detrimental effects of oil spillage include the pollution of the people's drinking water, damage to crops and death of the livestock due to lack of green grass to feed on. These result into poor agricultural productivity, hence a nation's inadequate food security (Bronwen, 2007). Such critical conditions are more common among the people of Bayelsa, where the bulk of the oil exploitation activities are carried out in the Niger Delta region. Earlier, Slaymaker (2002) had observed that the prevailing level of oil spills has affected household food security among the rural people.

Generally, oil spillages in the study area have often incapacitated the people by affecting their livelihood activities and exposing the communities to an increased risk of household food insecurity. It is true that the Nigerian nation today cannot be said to be enjoying food security. Ilayisu et al (2006) noted that Nigeria has become one of the greatest importers of food in tropical Africa. According to Idachaba (2004), a nation is food secured when the majority of the population has access to food in adequate quality and quantity, consistent with decent existence at all times. Similarly, household food security is said to exist when all people at the household level, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and performance for an active and healthy life. (FAO, 2001; Ogbuagu, 2004). Essentially, this study was designed to assess the effects of oil spillage on household food security in Bayelsa State, Nigeria. The study postulated a hypothesis of "no significant relationship between oil spillage and household food security".

### Methodology

The study was carried out in Bayelsa State in the Niger Delta region of Nigeria. The Niger Delta, which comprises of nine states, covers an area of 70,000 square kilometers of marsh land, creeks, tributaries and lagoons that drain the Niger River into the Atlantic at the Bight of Biafra (Agwu and Irohibe, 2014). The State shares boundaries with Delta State in the North; Rivers State in the East and the Atlantic ocean in the West and South. According to the National Population Commission (NPC, 2006), the population of the State is 1,704,515 with male as 874,083 and female as 830,432. The major occupation of the people is fishing.

Purposive sampling method was used in selecting three Local Government Areas mostly affected by oil spillage in the state namely; Ogbai, Yenagoa and Nembe. From each of the three Local Government Areas, four communities were randomly selected giving a total of twelve rural communities for the study. Ten rural farmers were also randomly selected from each of these communities, giving a total of one hundred and twenty (120) respondents as the sample size. Primary data were collected using structured questionnaire and analyzed with the use of descriptive statistics such as frequency

distribution, percentages and means, as well as simple linear regression model.

To examine whether oil spillage has any significant effect on food security, a simple linear regression was used to regress some food security indices. The hypothesis which states "There is no significant relationship between oil spillage and household food security" was tested using F-statistics.

#### **Results and Discussion.**

Socio-economic characteristics of the respondents are presented in table 1. These include, age, marital status, household size, educational qualification and estimated income per month.

**Table 1: distribution of Respondents according to their Socio-economic characteristics**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Age (Yrs)</b>		
<30	16	13.3
31-40	29	24.2
41-50	29	24.2
51-60	46	38.3
<b>Sex</b>		
Male	61	49.2
Female	59	50.8
<b>Marital status</b>		
Single	14	11.7
Married	106	88.3
<b>Household size</b>		
1-5	54	45.0
6-10	47	39.2
Above 10	19	15.8
<b>Farm size (ha)</b>		
<0.5-0.99	47	39.2
1 -2ha	41	34.2
3-4ha	32	26.7
<b>Educational qualification</b>		
Non-formal education	8	6.7
FSLC	20	16.7
WASSCE	40	33.3
OND/ND	3	2.5
HND/B.Sc	47	39.2
M.Sc./PhD	2	1.7
<b>Occupation</b>		
Fishing	64	53.3
Civil servant	42	35.0
Trading	14	11.7
<b>Estimated income (₦) per month</b>		
<4,800	18	15.0
4,801-9,600	14	11.7
9,601- 15,500	9	7.5
15,501-18,500	79	65.8
<b>Total</b>	<b>120</b>	<b>100</b>

Source: Field survey, 2013.

### Social –Economic Characteristics of Respondents

The results in Table 1 show that a majority of the farmers 74(61.7%) are located within the age brackets  $\leq 30$ ; 31-40; and 41-50. These are the young and middle aged farmers who are energetic and innovative and able to face the challenges of agriculture. A majority, (88.3%) of the respondents were married. Similarly, a relatively higher proportion, 54(45%) of the respondents had an average household size of between 1-5 persons. Majority (93.3%) of the respondents were literate. The implication is that these respondents are better equipped to take advantage of new techniques and innovations that could effectively assist them to cushion the effect of oil spillage and boost food security. The results also revealed that majority (53.3%) of the respondents were primarily engaged in fishing. Table I further revealed that a majority (65.8%) of the respondents received a monthly

income of between ₦ 15,501 - ₦18,500 which represent the highest of the income brackets and the value of which is scarcely or narrowly above \$ 1 a day. The implication is that the respondents, generally, are relatively poor. This finding is in line with the research results of Oyebamiji, Adekola and Igwe (2014) on the effect of oil spillage on Community development in Niger Delta, which agreed that poverty rate was still on the increase and there were more poor people than rich ones in the community. Nwachukwu and Ekanem (2016), similarly stated that, while the country makes millions of dollars daily from crude oil extracted from the Niger Delta, the lives of the people are impoverished and they live in abject poverty. The situation is understandable, considering the harsh environment resulting from the oil spillage and its attendant negative effects on the livelihood activities of the people.

**Table 2: Regression results on the relationship between oil spillage and household food security indices.**

Functional form	Variables	Constants (B <sub>0</sub> )	Coefficient (B <sub>1</sub> )	r <sup>2</sup>	Adj r <sup>2</sup>	f-statistic
<b>Linear</b>	Food consumption	26199.36	-27515.08	0.777	0.775	412.334
	Expenditure	(2.692)**	(-20.306)***			
	<b>Farmer's farm</b>	-2538.16	8780.123	0.753	0.751	361.615
	<b>Finance</b>	(-7.647)***	(19.016)***			
	<b>Sufficiency food</b>	-1.084851	-0.5264	0.317	0.311	54.758***
	<b>Supply</b>	(-2.123)**	(-7.399)			
	<b>Diet</b>	1.310777	0.222	0.649	0.646	219.064***
	<b>Diversification</b>	(12.176)***	(14.800)***			
	<b>Food safety</b>	2.293295	0.135461	0.668	0.665	237.706***
<b>exponential</b>	<b>Food availability</b>	(36.345)***	(15.417)***			
		2.489900	-0.121488	0.605	0.602	180.715***
		(38.364)***	(-13.443)***			
	Food consumption	11.361	0.123	0.747	0.744	348.650***
	Expenditure	(240.255)***	(18.672)***			
	<b>Farmer's farm</b>	8.286	0.268	0.722	0.719	306.770***
	<b>Finance</b>	(75.297)***	(17.514)***			
	<b>Sufficiency food</b>	-0.226	0.145	0.695	0.656	227.906***
	<b>Supply</b>	(-3.279)***	(15.097)***			
<b>Double-log<sup>L</sup></b>	<b>Diet</b>	0.461	0.079	0.614	0.611	188.016***
	<b>Diversification</b>	(11.087)***	(-13.712)***			
	<b>Food safety</b>	0.859	0.044	0.603	0.599	
		(36.715)***	(13.383)***			
	<b>Food availability</b>	-0.928	-0.039	0.543	0.539	140.548***
		(-39.715)***	(-11.855)***			
	Food consumption	10.791	0.765	0.707	0.705	285.087***
	Expenditure	(127.689)***	(16.885)***			
	<b>Farmer's farm</b>	6.990	1.699	0.706	0.704	
<b>Semi-log</b>	<b>Finance</b>	(37.214)***	(16.858)***			
	<b>Sufficiency food</b>	-0.912	-0.909	0.632	0.632	205.365***
	<b>Supply</b>	(-7.713)***	(-14.331)***			
	<b>Food safety</b>	0.597	0.305	0.717	0.714	298.760
		(18.114)***	(-17.285)***			
	<b>Food availability</b>	0.683	-0.305445	0.717	0.714	253.388***
		(18.114)***	(-17.285)***			
	Food consumption	-83057.49	161159.4	0.651	0.649	220.57***

Expenditure	(-4.106)****	(15.851)***			
<b>Farmer's farm</b>	-57730.49	50055.32	0.599	0.595	175918***
<b>Finance</b>	(-4.106)***	(13.263)***			
<b>Sufficiency food</b>	-2.573554	-2.752	0.212	0.205	31.673***
<b>Supply</b>	(-2.823)***	(-2.823)***			
<b>Diet</b>	0.317	1.362	0.598	0.595	175.466***
<b>Diversification</b>	(1.653)	(13.246)***			
<b>Food safety</b>	1.539	0.913	0.741	0.738	337.631
	(16.615)***	(18.375)***			
<b>Food availability</b>	1.769	-0.843	0.711	0.708	290.635***
	(19.193)***	(-17.048)***			

\*\*\*= 1% significant level; \*\*=5% significant level. Figure in parenthesis are t-level. L=lead equation

The result of the simple regression models in Table 2 shows that the coefficients of the determinations ( $r^2$ ) for the food security indices i.e food consumption expenditure; farmers' farm financing; sufficiency of food supply; food safety and food availability were 0.707, 0.706, 0.632, 0.717 and 0.717 respectively and significant at 1% level of probability.

These results explain the variations in the amount of losses incurred due to oil spillage in the study area. Furthermore, the research findings revealed that the F-ratio computed for each of the above food security indices was greater than the F-tab (6.76) at 1% significant level. To this extent, the null hypothesis which stated that there was no significant relationship between oil spillage and food security is rejected. The results corroborate the explanations of Oyinloye and Olamiju (2013) that, the exploration and exploitation of crude oil which had brought with it several cases of oil spillage, had also led to the depletion of farm lands, irreparable damage on water bodies and agricultural communities' supply of food. Worgu (2000) had similarly explained that oil production had definitely worsened environmental disaster resulting to food insecurity in the Niger Delta region.

### Conclusion and Recommendation

From the results of the study, oil spillage had a negative relationship with and inversely related to most of the food security indices; food consumption expenditure; farmers' farm financing; sufficiency of food supply; food safety and food availability. This implies that as the oil spillage increases, the various related food security indices will decrease. Based on the result findings, it is recommended that government should set up strategic food reserves in the study area as palliative measures to the consequences of oil spillage. It is also recommended that oil companies in the study area be compelled by government through legislation, to put in place effective control measures to check the effect of oil spillage.

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