



Research Paper

## Effects of Flood on Food Production/Security in Ahoada West Local Government Area of Rivers State

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### ABSTRACT

Flood over the past years has been the most devastating natural as well as man-made disaster due to climate change, a consequence of global warming. The effect of flood to food production/security in Ahoada West was investigated. The population the study comprised farmers and traders of food crops in the study area. Simple percentage and Chi Square were used to test at 0.05 level of significance to get the result of the survey which shows that the flood in Ahoada West led to severe food shortage as attested by 59 respondents representing 73.8% of the sample, this was followed by low food shortage with 15 respondents representing 18.7% of the sample, while the least effect of the flood in Ahoada West was mild with 6 respondents representing 7.5% of the sample. This means over 70% of farmlands and crop production being affected lead to severe food shortage due to the bad and slow response to flood by flood victims, who had no timely warning and were badly prepared for the disaster.

**KEYWORDS:** flood; food production; food security,

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### I. INTRODUCTION

Globally, disasters are seen to have one of the most devastating effects on economic development, livelihoods, agriculture, health, social and human life (Musah & Oloruntoba, 2013). Natural disasters have a very significant economic and food security impacts especially in rural farming communities (Musah & Oloruntoba, 2013), since climate change leading to flooding triggers crop failures, and heightens the incidence of food shortage due to poor harvest (Tolugbonse, Auta, Jaliya, Onu & Issa, 2010; Tunde, 2011).

The greatest environmental change facing the world today is regrettably climate change. Essop (2009) pointed that the severity of floods which elevates food security issues is mostly slight rainfall variations. FAO (2007) defines Food security as availability of food, access to it, the distribution of food, food production and ability to buy food if not produced. The relationship between climate change and food production is quite complex because climate change affects all dimensions of food production and security. These include utilization of food, food accessibility, the availability of food, and stabilization of food system. Food security all over the world is threatened every time there is a climate change that leads to flooding. Unfortunately, the rural farming communities happen to be the most vulnerable to food security crises (Tunde, 2011).

WHO (2003) reported that World Bank statistics showed Nigeria is responsible for about 10% of global emission. Nigeria alone emits 35 million tons of carbon (iv) oxide (CO<sub>2</sub>) and 12million tons of methane (CH<sub>4</sub>) which has a high warming potential than Carbon (iv) oxide. A major consequence of global warming is rise in sea level which most likely leads to flooding especially of the low lying coastal areas, with an adverse effect on food production especially on vulnerable populations which are the women and children (Tunde, 2011). Flooding reduces output and productivity of food and increases food security risks due to damaged ecosystem, loss of livelihood and diminished supply of food products (Tunde, 2011).

Flooding among all the natural disasters has caused severe damage to human communities and agriculture (Norouzi & Taslimi, 2012). Floods cause loss of life and reduction in economy in various parts of the world (Ramakrishna, Gaddam & Daisy, 2014). Sustainable development is threatened by the increased flood risks due to climate change. The damage of flood includes human damages and losses, flooded houses, flooding of residential and industrial places, flooded farmlands and loss in agricultural production (Norouzi and Taslimi,

2012), especially in rural communities like Ahoada West predominated by children, women and the elderly who depend mostly on their farmlands for their source of food and livelihood, but are not so equipped to cope with natural disasters and change in climate (Yocogan-Diano & Kashiwazaki, 2009).

Musah & Oloruntoba (2013) reported that in recent times, Flooding has been the most peculiar and devastating disaster in Nigeria. Increased rainfall, which is a natural consequence of global warming and climate change has brought about this flooding which has washed away loved ones, livelihood and farmlands in over 20 of 36 states in Nigeria (Punch Editorial, 2012) amongst which is Rivers State. Climate change cannot be stopped at this point, but disaster preparedness can be properly implemented. Scientists say with the rise in ocean level due to climate change coupled with melting large and small glaciers, sea levels have increased greatly over the past years. It is believed that the ocean level will increase further to at least 2-3ft more by the end of this century. Government therefore needs to strengthen its emergency response and recovery plans because if this happens, food production which is in fact one of the most vulnerable to flooding in terms of decline in agriculture and food security (Frederick, David, Yengo, Odoi and Afrifa, 2010) will suffer the most. Agriculture is somewhat rainfed (Ojo, 1987) hence most vulnerable to flooding due to excessive rainfall, a natural consequence of climate change. Agriculture contributes to more than 30% of the Nigeria's total annual GDP, employs about 70% of the non-oil export and more importantly provides over 80% of the food of nation (Adegboye, 2004). This makes Agriculture a major sector of the Nigerian economy.

Since flooding has become a source of concern to crop production in Rivers State as well as threatening the goal of food production of the state, there is a great need to study this phenomenon especially on a micro scale. This necessitated the research on the impact of flood on food production and security in Ahoada West, Rivers State.

### **Research Questions**

1. Are there any significant relationships between age and the perception of the effects of flood on food production in Ahoada West?
2. Are there any significant relationship between occupation and the perception of the effects of flood on food production in Ahoada West?
3. Are there any significant relationship between age and the perception of the effect of flood on livelihood and food security in Ahoada West?
4. Are there any significant relationship between occupation and the perception of the effect of flood on livelihood and food security in Ahoada West?

### **Hypotheses**

To determine the effect of flood on food production and security in Ahoada West, the hypotheses for the study was tested at 0.05 level of significance as follows:

**Ho<sub>1</sub>:** Age does not have any significant relationship with the effects of flood on food production in Ahoada West.

**Ho<sub>2</sub>:** Occupation does not have any significant relationship with the effects of flood on food production in Ahoada West.

**Ho<sub>3</sub>:** Age does not have any significant relationship with the impact of flood on livelihood and food security in Ahoada West.

**Ho<sub>4</sub>:** Occupation does not have any significant relationship with the impact of flood on livelihood and food security in Ahoada West.

### **Aim and Objectives of the Study**

The study aims to provide quantitative and qualitative information on the Effects of flood on food production/security in Ahoada West, Rivers State. The aim will be achieved following the objectives;

1. To determine the relationship between age and occupation on the effect of flooding on food production in Ahoada West.
2. To determine the effect of flood on livelihood and food security in Ahoada West.
3. To assess the nature of the response, recovery and preparedness of flood victims in Ahoada West.
4. To determine the measures adopted to ameliorate the movement of people in the event of a disaster (flood).

## **II. METHODOLOGY**

The study adopted the survey concerned with identifying the changes that occur in certain characteristics, features or variables of a given population of individuals and group of people (Nwankwo, 2013). Furthermore, in cross-sectional survey, data drawn from a sample of the population (Ahoada West) was analyzed segment by segment according to various parameters like age, occupation, income etc. (Nwankwo,

2013). In this study empirical data was collected on the effect of flooding on food security based on variables like town, gender, age and occupation of the respondents in Ahoada West Local Government Area.

The cross-sectional survey also employs primary and secondary data. The primary data contained firsthand information derived from questionnaire filled out by farmers and traders of farm products. While the secondary source of data consisted of information included in: journals, publications, newspaper reports, NEMA reports and internet information as well as maps.

The population of the study consists of all the farmers and traders of food crops in the 4 Communities in Ahoada West Local Government Area communities affected by the 2012 flood disaster. Specifically, the target population consists of all the farmers and traders of food crops in Akinima, Ogbogolo, Egbema, and Ekpeye communities in Ahoada West Local Government Area who were severely affected by the 2012 flood disaster.

### ***Methods of Data Collection***

The data was collected from a sample of eighty (80) farmers and traders or respondents (males and females) randomly and equitably (20 each) selected from the deserted communities of Akinima, Ogbogolo, Egbema, and Ekpeye in Ahoada West Local Government Area. This number became the option because at January- February when the questionnaire was administered, most of the out migrant and displaced during the flood still could not return.

Through the use of a 16 item test titled “Effect of Flood on Food Security Questionnaire” (EFFSQ). The EFFSQ instrument containing both closed-ended and open-ended questions was designed as questionnaire or instrument for data collection to elicit vital information from the farmers and traders of farm products on the effects the flood had on food production.

Furthermore, the “Effect of Flood on Food Production Questionnaire” (EFFSQ) instrument consisted of two sections. Section A containing the demographic variables while Section B contains the item responses. Data obtained from item 1, answers research question 1. Data obtained from items 2-4 answers research question 2, Data obtained from items 5-9 answers research question 3, while Data obtained from items 10-16 answers research question 4. Similarly, Data obtained from age of the respondents alongside the aggregate of item 1 is used to test hypothesis 1, Data obtained from occupation of the respondents alongside the aggregate of items 2-4 is used to test hypothesis 2, Data obtained from age of the respondents alongside the aggregate of items 5-9 is used to test hypothesis 3, while Data obtained from occupation of the respondents alongside the aggregate of items 10-16 is used to test hypothesis 4.

The “Effects of Flood on Food Production Questionnaire” (EFFSQ) instrument was validated by the research supervisor who studied the topic of the study, contents via: statement of the problem, purpose of the study with specific objectives, research questions and hypotheses in order to ascertain if the instrument measures what it is meant to measure. The comments, suggestions, modifications, and expertise of the supervisor was integrated or adopted during the final construction of the instrument.

This necessitated the administration of the “Effects of Flood on Food Production Questionnaire” (EFFSQ) instrument for a period of one month (January – February 2013) to farmers, traders and other residents in Ahoada West Local Government Area to give an account of the effects of the 2012 flood disaster on food production/security in their community. All the 80 copies of the Impact of Flood on Food Security Questionnaire (EFFSQ) instrument administered to the respondents were retrieved (representing 100% return rate) and subsequently used for analysis.

### ***Description of Study Area***

The study area Ahoada West is a Local Government in Rivers State with headquarters in Akinima. It is located in the North-West of Rivers State. It was created from old Ahoada Local Government in 1996, and is bounded by the Orashi River which makes it part of the Orashi region. The indigenes of Ahoada West are mostly farmers and traders of food crops as would be seen in the following chapter. The study will centre on four of the communities: Akinima the headquarters, Engenni, Ogbogolo and Ekpeye.

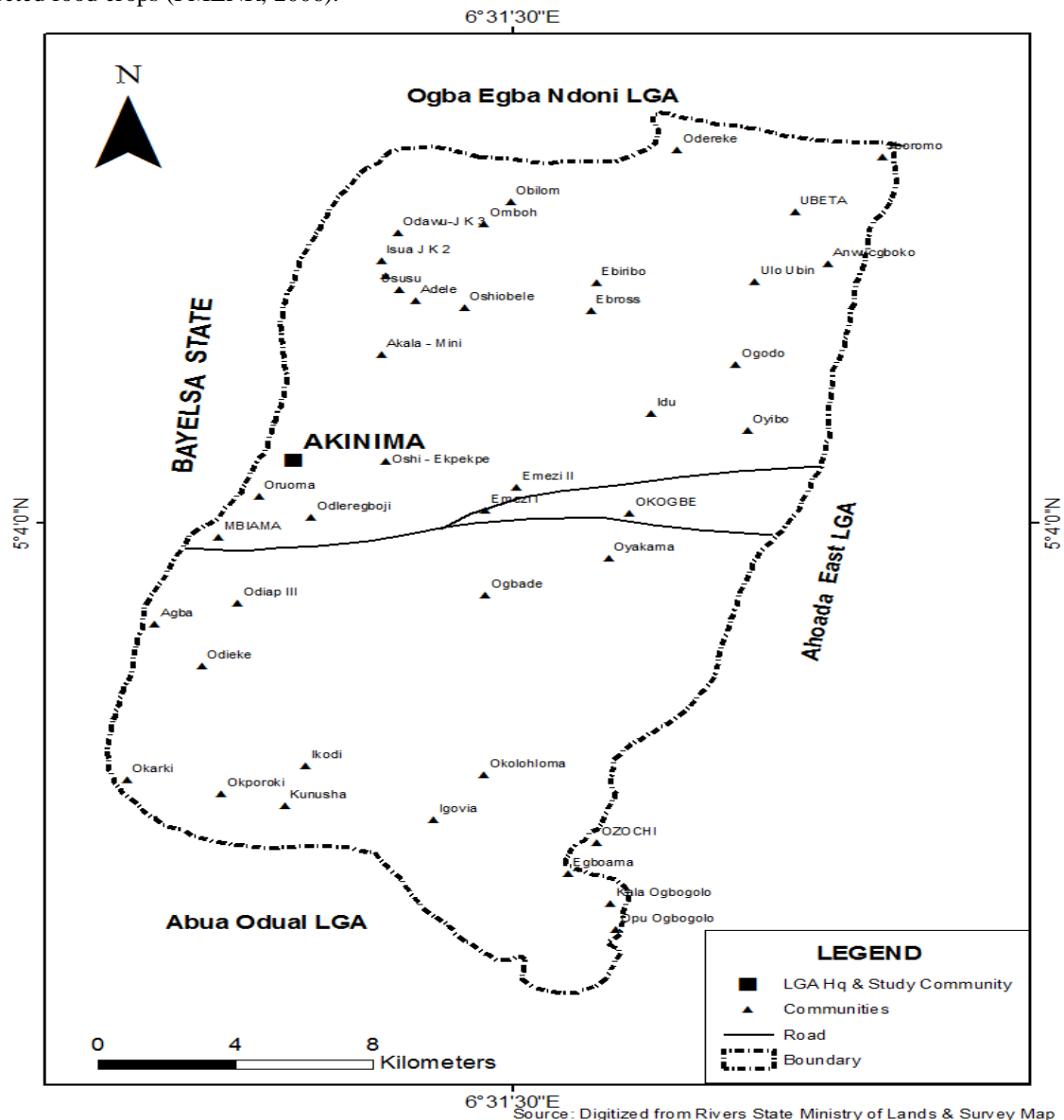
The National Population Commission reports that Ahoada West is densely populated with about 280, 730 people (census, 2010) as at December 2010 from 249, 232 in 2006 (census, 2006). This 3% increase in populations means increase in demand for food and of course increase in other vulnerabilities since the people are mainly farmers, fishermen and hunters (Rivers State Min. of Water Resource and Rural Development, 2012). There are about 82 villages in Ahoada West.

The climate is greatly influenced by its nearness to the Atlantic Ocean. The area is characterized by dry season from November to March and rainy season from April to October (FMENR, 2006). The annual rainfall is about 2500mm. It rains throughout the year from February with its peak in June and September and a short break in August. The relative humidity is usually above 85% during the rainy season and may decrease to 45.5% in the dry season. The harmathan months of December and January have the lowest relative humidity.

The ambient air temperature ranged between 24.5<sup>0</sup>C and 32<sup>0</sup>C in the wet season and 25<sup>0</sup>C to 36<sup>0</sup>C in the dry season (FMENR, 2006).

Ahoada West has a mixed vegetation, but the two prominent types are the swamp forest and rain forest. The study area has the forest/farmland mosaic and secondary forest. The swamp forest is the most extensive of the vegetation in Ahoada West. It promotes the growth of crops such as plantain (*Musa spp.*,) which is one of the major food crops cultivated in Ahoada West (Shell, 2012). The forest/farmland promotes the growth of cassava (*Manihot esculenta*) and maize (*Zea mays*).

The top soil of Ahoada West consist of sandy clay while the lower depth consist of coarse sand and fine sands that are well sorted. The soil of the study area can be broadly classified as rainforest soil. The P<sup>H</sup> of the soil ranges from 2.2 – 6.4 with high organic carbon content and fertility which supports the growth of the selected food crops (FMENR, 2006).



### Methods of Data Analysis

Simple percentage and Chi-square test ( $X^2$ ) were used to analyze the research questions and test the hypotheses

respectively. Chi-square is expressed as 
$$X^2 = \sum \frac{O - E}{E}$$

Where  $\sum$  = Summation, O= observed frequency and e = expected frequency.

Chi-square test as a technique for data analysis is adopted since the research consist of more than one group data collected from direct sources. Chi-square was also used because the variables used in the study were numerical and categorical.

**Presentation of Results**

**Table 4.1: Age distribution of the respondents**

Age	N	%	Remark
10-18 years	8	10.0	Dominant
19-28 years	18	22.5	
29-38 years	26	32.5	
39-49 years	17	21.3	
50 years and Above	11	13.8	
<b>Total</b>	<b>80</b>	<b>100.0</b>	

Table 4.1 shows that the age of the respondents with 29-38 years dominating with 26 respondents representing 32.5% of the sample.

**Research question 1:** Are there any significant relationships between age and the perception of the effects of flood on food production in Ahoada West?

**Table 4.2: responses for the effects of the 2012 flood in Ahoada West Local Government Area on crop production**

effect of 2012 Flood	N	%	Remark
Severe Food Shortage	59	73.8	Dominant
Low Food Shortage	15	18.7	
Mild Food Shortage	6	7.5	
<b>Total</b>	<b>80</b>	<b>100.0</b>	

Table 4.1 and 4.2 below shows that there is a significant relationships between age and the perception of the effects of flood on food production in Ahoada West. Due to the fact that there are more people above 50, harvesting and fleeing the flood on time becomes a bit difficult hence increasing the damage to food production.

**Research question 2:** Are there any significant relationship between occupation and the perception of the effects of flood on food production in Ahoada West?

**Table 4.3: Occupation distribution of the Respondents**

Occupation	N	%	Remark
Civil Servants	11	13.8	Dominant
Farmers	34	42.5	
Traders	17	21.3	
Self Employed	10	12.5	
Private Worker	8	10.0	
<b>Total</b>	<b>80</b>	<b>100.0</b>	

Table 4.3 answers research question 2 stating that there is a significant relationship between occupation and the perception of the effect of flood on food production in Ahoada West. Since most of the people are farmers and traders of farm products, recovery and rehabilitation becomes a challenge due to low income. Therefore the effect of the flood to food production is greatly felt by the people in the study area.

**Table 4.4: Distribution of the respondents by Monthly Income**

Monthly Income	N	%	Remark
5000-9900	27	33.8	Dominant
10000-14900	34	42.5	
15000-19900	18	22.5	
20000 and Above	1	1.3	
<b>Total</b>	<b>80</b>	<b>100.0</b>	

Table 4.4 shows that the respondents with monthly income of 10000-14900 dominated with 34 respondents representing 42.5% of the sample, this was followed by respondents of between 5000-9900 monthly

income with 27 respondents representing 33.8% of the sample, respondents within 15000-19900 had 18 respondents representing 22.5% of the sample, while the least monthly income represented was 20000 and above with 1 respondent representing 1.3% of the sample.

**Research question 3:** Are there any significant relationship between age and the perception of the effect of flood on livelihood and food security in Ahoada West?

**Table 4.5: responses for the effect of flood on livelihood and food security in Ahoada West Local Government Area**

S/N	Item	Options			Total
		0-30%	31-69%	70% and Above	
1	Percentage of farmland affected by the 2012 flood	13 (16.2%)	18 (22.5%)	49 (61.3%)	80 (100%)
	<b>Item</b>	<b>Options</b>			<b>Total</b>
		<b>Major</b>	<b>Minor</b>	<b>Mild</b>	
2	Role played by agriculture in Ahoada West LGA	68 (85%)	9 (11.3%)	3 (3.7%)	80 (100%)
	<b>Item</b>	<b>Options</b>			<b>Total</b>
		<b>Total</b>	<b>Partial</b>	<b>No Idea</b>	
3	Extent of damage caused by the flood in Ahoada West LGA	60 (75%)	18 (22.5%)	2 (2.5%)	80 (100%)

Table 4.5 shows that occupation there is a significant relationship between age and the perception of the effects of flood on livelihood and security. Since most of the people live by farming, then in the event of the flood, there is a disconnect in the source of the livelihood of the people who happen to be old, children and women. Therefore the effect of the flood on the livelihood and security concerns the occupation of the people significantly.

Table 4.7 shows the frequency and percentage responses of the effect of flood on livelihood and food security in Ahoada West. The table explains that over 70% of farmlands in Ahoada West was affected by the 2012 flood (49 respondents representing 61.3% of the sample), leading to the obstruction of food production which is a major source of livelihood in the Area (68 respondents representing 85% of the sample) reveals the role played by Agriculture as major as against the damage of farmlands by the flood (60 respondents representing 75% of the sample) from the table 4(8) above. This shows that there is significant relationship between age and the perception of the effect of flood on livelihood and food security in Ahoada West.

**Table 4.6: Educational Qualification distribution of the respondents**

Educational Qualification	N	%	Remark
No Formal Education	6	7.5	Dominant
Primary Education	17	21.3	
Secondary Education	39	48.8	
Tertiary Education	18	22.5	
<b>Total</b>	<b>80</b>	<b>100.0</b>	

Table 4.6 shows that the respondents with secondary education dominated with 39 respondents representing 48.8% of the sample.

**Research question 4:** Are there any significant relationship between occupation and the perception of the effect of flood on livelihood and food security in Ahoada West?

**Table 4.7: responses on the nature of the response, recovery and preparedness of flood victims in Ahoada West Local Government Area**

S/N	Item	Options		Total
		Good	Bad	
4	Nature of response to the 2012 flood in Ahoada West LGA	31 (38.8%)	49 (62.2%)	80 (100%)
	<b>Item</b>	<b>Options</b>		<b>Total</b>
		<b>Slow</b>	<b>Fast</b>	
5	Rate of response to the 2012 flood in Ahoada West LGA	60 (75%)	20 (25%)	80 (100%)
	<b>Item</b>	<b>Options</b>		<b>Total</b>
		<b>Yes</b>	<b>No</b>	
6	Was the warning good and timely?	15 (18.7%)	65 (81.3%)	80 (100%)
	<b>Item</b>	<b>Options</b>		<b>Total</b>



		Slow	Fast	
7	How was the recovery in Ahoada West LGA?	32 (40%)	48 (60%)	80 (100%)
	<b>Item</b>	<b>Options</b>		<b>Total</b>
		<b>Good</b>	<b>Bad</b>	
8	How was the level of preparedness?	22 (27.5%)	58 (72.5%)	80 (100%)

Table 4.7 reveals that the nature of response to the 2012 flood in the area is bad (49 respondents representing 62.2% of the sample) and slow (60 respondents representing 75% of the sample), with no good and timely warning (65 respondents representing 81.3% of the sample), slow recovery (48 respondents representing 60% of the sample), while the level of preparedness was bad (58 respondents representing 72.5% of the sample). This shows that there is significant relationship between occupation and the perception of the effect of flood on livelihood and food security in Ahoada West.

**Table 4.8: responses for the measures adopted to ameliorate the flight of flood victims in Ahoada West**

S/N	Item	Agree	Disagree	Total
9	Assisting farmers with grants and seeds	73 (91.2%)	7 (8.8%)	80 (100%)
10	Ensuring the fast recovery of flood victims	62 (77.5%)	18 (22.5%)	80 (100%)
11	Inform and warn farmers on the dangers of flooding	60 (75%)	20 (25%)	80 (100%)
12	Provision of good place to market and store food crops	63 (78.8%)	17 (21.2%)	80 (100%)
13	Provision of correct weather information for farmers	61 (76.2%)	19 (23.8%)	80 (100%)
14	Adequate amenities should be provided to the communities	62 (77.5%)	18 (22.5%)	80 (100%)
15	Setting up an agency to regulate and coordinate flooding activities	64 (80%)	16 (20%)	80 (100%)

Table 4.8 reveals that the measures to be adopted to ameliorate the movement of flood victims include: assisting farmers with grants and seeds (73 respondents representing 91.2% of the sample), followed by setting up agencies to regulate and coordinate flooding activities (64 respondents representing 80% of the sample), provision of good place to market and store food crops (63 respondents representing 78.8% of the sample), ensuring fast recovery to flood victims and adequate amenities should be provided to the communities (each with 62 respondents representing 77.5% of the sample), provision of correct weather information for farmers (with 61 respondents representing 76.2% of the sample), while the least measure adopted to ameliorate the flight of flood victims in Ahoada West Local Government Area was inform and warn farmers on the dangers of flooding (60 respondents representing 75% of the sample).

**Test Of Hypotheses**

**Ho<sub>1</sub>:** Age does not have any significant relationship with the perception of the effect of flood on food production in Ahoada West.

**Table 4.9: relationship between age and the effect of flood on food production in Ahoada West (N= 80).**

Age	Severe Food Shortage	Low Food Shortage	Mild Food Shortage	Total	Df	X <sup>2</sup>	p-value	Decision
10-18 years	4 (5%)	4 (5%)	0 (0.0%)	8 (10%)	12	5.05	.956	NS
19-28 years	7 (8.8%)	9 (11.3%)	2 (2.5%)	18 (22.5%)				
29-38 years	14 (17.5%)	9 (11.3%)	3 (3.7%)	26 (32.5%)				
39-49 years	7 (8.8%)	9 (11.3%)	1 (1.3%)	17 (21.3%)				
50 years and Above	6 (7.5%)	4 (5%)	1 (1.3%)	11 (13.8%)				
<b>Total</b>	<b>38 (47.5%)</b>	<b>35 (43.8%)</b>	<b>7 (8.8%)</b>	<b>80 (100%)</b>				

NS= Not Significant (p>.05)                      S= Significant (p<.05)

Table 4.9 show that 4(5%) respondents in the age bracket of 10-18 years suffered severe and low food shortage respectively, while no respondent with 10-18 years suffered mild food shortage. 7 (8.8%) respondents in the age bracket of 19-28 years experienced severe food shortage, 9 (11.3%) of them experienced low food shortage. In the age bracket of 29-38 years, 14 (17.5%) respondents experience severe food shortage, 9 (11.3%) of the respondents experienced low food shortage, with 3 (3.7%) of the respondents in the age bracket of 29-38 years experienced mild food shortage, in the age bracket of 39-49 years 7 (8.8%) respondents experienced severe food shortage, 9 (11.3%) of the respondents experienced low food shortage, with 1 (1.3%) respondents

experience mild food shortage, while in the age bracket of 50 years and above 6 (7.5%) respondents experienced severe food shortage, 4 (5%) of the respondents experienced low food shortage, with 1 (1.3%) respondents experience mild food shortage. Furthermore, the relationship between age and the impact of flood on food production in Ahoada West Local Government Area was not statistically significant ( $p>0.05$ ). This means that age has no significant relationship with the perception on the effect of flood on food production in Ahoada West ( $p>0.05$ ).

**Ho<sub>2</sub>:** Occupation does not have any significant relationship with the perception of the effect of flood on food production in Ahoada West.

**Table 4.10: relationship between occupation and the effect of flood on food production in Ahoada West N= 80.**

Occupation	Severe Food Shortage	Low Food Shortage	Mild Food Shortage	Total	Df	X <sup>2</sup>	p-value	Decision
Civil Servant	4 (5%)	6 (7.5%)	1 (1.3%)	11 (13.8%)	12	3.66	.989	NS
Farmer	16 (20%)	15 (18.8%)	3 (3.7%)	34 (42.5%)				
Trader	8 (10%)	7 (8.8%)	2 (2.5%)	17 (21.2%)				
Self Employed	6 (7.5)	4 (5%)	0 (0.0%)	10 (12.5%)				
Private Worker	4 (5%)	3 (3.7%)	1 (1.3%)	8 (10%)				
<b>Total</b>	<b>38 (47.5%)</b>	<b>35 (43.8%)</b>	<b>7 (8.8%)</b>	<b>80 (100%)</b>				

NS= Not Significant ( $p>.05$ )                      S= Significant ( $p<.05$ )

Table 4.10 shows that 4(5%), 6 (7.5%) and 1 (1.3%) respondents who are Civil Servants experienced severe, low and mild food shortage respectively. 16 (20%), 15 (18.8%) and 3 (3.7%) respondents who are farmers experienced severe, low and mild food shortage respectively, 8 (10%) traders experienced severe food shortage, 7 (8.8%) traders experience low food shortage, with 2 (2.5%) traders experienced mild food shortage. 6 (7.5%) and 4 (5%) respondents who are self-employed experienced severe and low food shortage respectively, while 4 (5%), 3 (3.7%) and 1 (1.3%) respondents who work in private company experienced severe, low and mild food shortage respectively in Ahoada West. Furthermore, the relationship between occupation and the effect of flood on food production in Ahoada West was not statistically significant ( $p>0.05$ ). This means that occupation has no significant relationship with the perception of the effect of flood on food production in Ahoada West ( $p>0.05$ ).

**Ho<sub>3</sub>:** Age does not have any significant relationship with the perception of the effect of flood on livelihood and food security in Ahoada West.

**Table 4.11: relationship between age and the impact of flood on livelihood and food security in Ahoada West N= 80.**

Age	0-30%	31-69%	70% and Above	Total	Df	X <sup>2</sup>	p-value	Decision
10-18 years	2 (2.5%)	3 (3.7%)	3 (3.7%)	8 (10%)	12	9.24	.323	NS
19-28 years	3 (3.7%)	3 (3.7%)	12 (15%)	18 (22.5%)				
29-38 years	3 (3.7%)	4 (5%)	19 (23.8%)	26 (32.5%)				
39-49 years	5 (6.3%)	5 (6.3%)	7 (8.8%)	17 (21.2%)				
50 years and Above	0 (0.0%)	3 (3.7%)	8 (10%)	11 (13.8%)				
<b>Total</b>	<b>13 (16.2%)</b>	<b>18 (22.5%)</b>	<b>49 (61.3%)</b>	<b>80 (100%)</b>				
Age	Major	Minor	Mild	Total	Df	X <sup>2</sup>	p-value	Decision
10-18 years	0 (0.0%)	2 (2.5%)	1 (1.3%)	3 (3.7%)	12	11.67	.473	NS
19-28 years	4 (5%)	0 (0.0%)	0 (0.0%)	4 (5%)				
29-38 years	26 (32.5%)	4 (5%)	2 (2.5%)	32 (40%)				
39-49 years	17 (21.2%)	2 (2.5%)	0 (0.0%)	19 (23.7%)				
50 years and Above	21 (26.3%)	1 (1.3%)	0 (0.0%)	22 (27.5%)				
<b>Total</b>	<b>68 (85%)</b>	<b>9 (11.3%)</b>	<b>3 (3.8%)</b>	<b>80 (100%)</b>				
Age	Total	Partial	No Idea	Total	Df	X <sup>2</sup>	p-value	Decision
10-18 years	2 (2.5%)	0 (0.0%)	0 (0.0%)	2 (2.5%)				
19-28 years	8 (10%)	3 (3.7%)	2 (2.5%)	13 (16.2%)				
29-38 years	10 (12.5%)	5 (6.3%)	0 (0.0%)	15 (18.8%)				
39-49 years	28 (35%)	7 (8.8%)	0 (0.0%)	35 (43.8%)				



50 years and Above	12 (15%)	3 (3.7%)	0 (0.0%)	15 (18.8%)	12	10.76	.550	NS
<b>Total</b>	<b>60 (75%)</b>	<b>18 (22.5%)</b>	<b>2 (2.5%)</b>	<b>80 (100%)</b>				

NS= Not Significant (p>.05) S= Significant (p<.05)

Table 4.11 shows that 2(2.5%), 3(3.7%) and 3(3.7%) respondents in the age bracket of 10-18 years had 0-30%, 31-69% and 70% and above farmlands respectively is affected by the 2012 flood in Ahoada West, 3 (3.7%), 3 (3.7%) and 12 (15%) had 0-30%, 31-69% and 70% and above farmlands respectively affected by the 2012 flood in Ahoada West, 3 (3.7%), 4 (5%) and 19 (23.8%) had 0-30%, 31-69% and 70% and above farmlands respectively affected by the 2012 flood in Ahoada West Local Government Area, 5 (6.3%), 5 (6.3%) and 7 (8.8%) had 0-30%, 31-69% and 70% and above farmlands respectively affected by the 2012 flood in Ahoada West, and 3 (3.7%) and 8 (10%) had 0-30%, 31-69% and 70% and above farmlands respectively affected by the 2012 flood in Ahoada West.

Similarly, 2(2.5%) and 1 (1.3%) respondents in the age bracket of 10-18 years indicated that agriculture played a major, minor and mild role respectively in Ahoada West, 4 (5%) respondents in the age bracket of 19-28 years indicated that agriculture played a major, minor and mild role respectively in Ahoada West, 26 (32.5%), 4(5%) and 2 (2.5%) respondents in the age bracket of 29-38 years indicated that agriculture played a major, minor and mild role respectively in Ahoada West Local Government Area, 17 (21.2%), 2(2.5%) and 0 (0.0%) respondents in the age bracket of 39-49 years indicated that agriculture played a major, minor and mild role respectively in Ahoada West, and 21 (26.3%) and 1(1.3%) respondents in the age bracket of 50 years and above indicated that agriculture played a major, minor and mild role respectively in Ahoada West.

Also 2 (2.5%) respondents in the age bracket of 10-18 years indicated that the 2012 flood in Ahoada West had total, partial and no damage to agriculture respectively in Ahoada West, 8 (10%), 3(3.7%) and 2 (2.5%) respondents in the age bracket of 19-28 years indicated that the 2012 flood in Ahoada West had total, partial and no damage to agriculture respectively in Ahoada West, 10 (12.5%) and 5(6.3%) respondents in the age bracket of 29-39 years indicated that the 2012 flood in Ahoada West had total, partial and no damage to agriculture respectively in Ahoada West Local Government Area, 28 (35%) and 7(8.8%) respondents in the age bracket of 39-49 years indicated that the 2012 flood in Ahoada West had total, partial and no damage to agriculture respectively in Ahoada West, while 12 (15%) and 3(3.7%) respondents in the age bracket of 50 years and above indicated that the 2012 flood in Ahoada West had total, partial and no damage to agriculture respectively in Ahoada West.

Furthermore, the relationship between age and the effect of flood on livelihood and food security in Ahoada West was not statistically significant (p>0.05). This means that age had no significant relationship with the perception of the effects of flood on livelihood and food security in Ahoada West (p>0.05).

**Ho<sub>4</sub>:** Occupation does not have any significant relationship with the perception of the effect of flood on livelihood and food security in Ahoada West.

**Table 4.12: Chi-square distribution of the relationship between occupation and the impact of flood on livelihood and food security in Ahoada N= 80.**

Occupation	0-30%	31-69%	70% and Above	Total	Df	X <sup>2</sup>	p-value	Decision
Civil Servant	2 (2.5%)	3 (3.7%)	6 (7.5%)	11 (3.8%)	12	12.31	.138	NS
Farmer	6 (7.5%)	7 (8.8%)	21 (26.2%)	34 (42.5%)				
Trader	0 (0.0%)	6 (7.5%)	11 (13.8%)	17 (21.2%)				
Self Employed	1 (1.3)	2 (2.5%)	7 (8.8%)	10 (12.5%)				
Private Worker	4 (5%)	0 (0.0%)	4 (5%)	8 (10%)				
<b>Total</b>	<b>13 (16.2%)</b>	<b>18 (22.5%)</b>	<b>49 (61.3%)</b>	<b>80 (100%)</b>				
Occupation	Major	Minor	Mild	Total	Df	X <sup>2</sup>	p-value	Decision
Civil Servant	12 (15%)	2 (2.5%)	0 (0.0%)	14 (17.5%)	12	7.45	.826	NS
Farmer	36 (45%)	4 (5%)	0 (0.0%)	40 (50%)				
Trader	5 (6.3%)	1 (1.3%)	0 (0.0%)	6 (7.5%)				
Self Employed	11 (13.8)	2 (2.5%)	3 (3.8%)	16 (20%)				
Private Worker	4 (5%)	0 (0.0%)	0 (0.0%)	4 (5%)				
<b>Total</b>	<b>68 (85%)</b>	<b>9 (11.3%)</b>	<b>3 (3.8%)</b>	<b>80 (100%)</b>				

Occupation	Total	Partial	No Idea	Total	Df	X <sup>2</sup>	p-value	Decision
Civil Servant	2 (2.5%)	3 (3.7%)	0 (0.0%)	5 (6.3%)	12	13.45	.338	NS
Farmer	32 (40%)	6 (7.5%)	2 (2.5%)	40 (50%)				
Trader	15 (18.8%)	6 (7.5%)	0 (0.0%)	21 (26.3%)				
Self Employed	7 (8.8%)	2 (2.5%)	0 (0.0%)	9 (11.3%)				
Private Worker	4 (5%)	0 (0.0%)	0 (0.0%)	4 (5%)				
<b>Total</b>	<b>60 (75%)</b>	<b>18 (22.5)</b>	<b>2 (2.5%)</b>	<b>80 (100%)</b>				

Table 4.12 shows that 2 (2.5%), 3(3.7%) and 6 (7.5%) respondents who are Civil Servants had 0-30%, 31-69% and 70% and above farmlands respectively affected by the 2012 flood in Ahoada West Local Government Area, 6 (7.5%), 7 (8.8%) and 21 (26.2%) who are farmers had 0-30%, 31-69% and 70% and above farmlands respectively affected by the 2012 flood in Ahoada West, 0 (0.0%), 6 (7.5%) and 11 (13.8%) traders had 0-30%, 31-69% and 70% and above of their farmlands respectively affected by the 2012 flood in Ahoada West, 1 (1.3%), 2 (2.5%) and 7 (8.8%) self-employed respondents had 0-30%, 31-69% and 70% and above farmlands respectively affected by the 2012 flood in Ahoada West, while 4 (5%), and 4 (5%) working in private company had 0-30%, 31-69% and 70% and above farmlands respectively affected by the 2012 flood in Ahoada West.

Similarly, 12 (15%) and 2(2.5%) respondents who are Civil Servants indicated that agriculture played a major, minor and mild role respectively in Ahoada West, 36 (45%) and 4 (5%) who are farmers indicated that agriculture played a major, minor and mild role respectively in Ahoada West, 5 (6.3%) and 1 (1.3%) traders indicated that agriculture played a major, minor and mild role respectively in Ahoada West, 11 (13.8%), 2 (2.5%) and 3 (3.7%) self-employed respondents indicated that agriculture played a major, minor and mild role respectively in Ahoada West, while 4 (5%) working in private company indicated that agriculture played a major, minor and mild role respectively in Ahoada West.

Also 2 (2.5%) and 3(3.7%) respondents who are civil servants indicated that the 2012 flood in Ahoada West had total, partial and no damage to agriculture respectively in Ahoada West, 32 (40%), 6 (7.5%) and 2 (2.5%) respondents who are farmers indicated that the 2012 flood in Ahoada West had total, partial and no damage to agriculture respectively in Ahoada West, 15 (18.8%) and 6 (7.5%) respondents who are traders indicated that the 2012 flood in Ahoada West Local Government Area had total, partial and no damage to agriculture respectively in Ahoada, 7 (8.8%) and 2 (2.5%) respondents who are self-employed indicated that the 2012 flood in Ahoada West Local Government Area had total, partial and no damage to agriculture respectively in Ahoada West Local Government Area, while 4 (5%) respondents who are employed in private company indicated that the 2012 flood in Ahoada West had total, partial and no damage to agriculture respectively in Ahoada West.

Furthermore, the relationship between occupation and the effect of flood on livelihood and food security in Ahoada West was not statistically significant ( $p>0.05$ ). This means that occupation had no significant relationship with the effects of flood on livelihood and food security in Ahoada West ( $p>0.05$ ).

### III. DISCUSSION OF FINDINGS

The data in Table 4.5 reveals that the effect of the flood in Ahoada West on crop production led to severe food shortage. This finding is consistent with Norouzi and Taslimi (2012) who emphasized that flooding among all the natural disasters has caused the most damage to human communities and agriculture, leading to loss of life and livelihood in various parts of the globe (Ramakrishna, Gaddam & Daisy, 2014).

The data in Table 4.6 reveals that flood affected over 70% of farmlands in Ahoada West. This finding is in agreement with Norouzi (2012) that the increased risk of floods due to climate change led to severe damages like human damages and loses, flooded houses, residential and industrial places, flooded farmlands and loss in agricultural production that threatens sustainable development.

The result in Table 4.7 reveals that the nature of the response to flood victims in Ahoada West is bad and slow with no timely warning. Similarly, their level of preparedness to flood is bad. This finding is in agreement with the views of Yocogan-Diano and Kashiwazaki (2009) who reiterates that floods affects especially rural communities predominated by improvised, old and poor people especially women who lack resources to enable them cope with flood and other natural disasters.

The result in Table 4.8 reveals that: assisting farmers with grants and seeds, setting up agencies to regulate and co-ordinate flooding activities, providing a good place to market and store food crops, ensuring fast recovery to flood victims, provision of adequate amenities to the farmers, provision of correct weather information for farmers and informing and warning farmers on the dangers of flooding are measures to be

adopted to facilitate the response and recovery by flood victims in Ahoada West. This finding is consistent with Yocogan-Diano and Kashiwazaki (2009) who opined that giving grants and seeds to farmers, setting up flood regulatory agency, provision of marketing and storage facilities, educating farmers on fast recovery, provision of amenities including timely prediction of weather and warning farmers on the dangers of flooding are effective measures to improve the recovery of flood victims.

The data in Table 4.9 revealed that age had no significant relationship with the effect of flood on food production in Ahoada West Local Government Area. This finding is in agreement with Tunde (2011) who stated that the implication of flood on agriculture, productivity, livelihoods and food security in Nigeria, exposed predominantly farmers to high volume of displacement- a situation which would further exacerbates food crises as a disaster resulting into damage to farm lands and crops which can pose serious economic challenge.

The data contained in table 4.10 reveals that occupation had no significant relationship with the effect of flood on food production in Ahoada West. This finding is in agreement with earlier findings by Essop (2009) who stated that floods threaten food security for the farmer and trader of food products, who are vulnerable to the ravaging effect of this natural disaster (flooding) capable of damaging infrastructure such as roads and triggering crop failure.

The data in Table 4.11 indicates that age had no significant relationship with the effect of flood on livelihood and food security in Ahoada West. This aligns with the finding by the Glossary of Meteorology (2000) that flooding can lead to increase in respiratory problems and other illnesses in people of all ages and profession.

The data in table 4.12 reveals that occupation had no significant relationship with the effect of flood on livelihood and food security in Ahoada West. This is in agreement with findings by Tunde (2011) and Nmobu, et al., (2013) that the effect of flood disaster leads to economic hardship, increased food costs, food shortages, and price increases in food production which could cause psychological and occupational or other damages to those affected, in particular where deaths, serious injuries and loss of property occur.

#### **IV. CONCLUSION AND RECOMMENDATION**

##### ***Conclusion***

The study concludes that the 2012 flood in Ahoada West Local Government Area affected over 70% of farmlands and crop production leading to severe food shortage due to the bad and slow response to flood by flood victims who had no timely warning thus lacked preparedness in the event of the disaster.

Furthermore, the measures to be adopted to ameliorate the movement and rescue of flood victims of different age and occupation in Ahoada West include: assisting farmers with grants and seeds, setting up of agencies to regulate and coordinate flooding activities, provision of good place to market and store food crops, encouraging and educating farmers for fast recovery, provision of adequate resources to the communities, provision of correct weather information for farmers and informing and warning farmers regularly on the dangers of flooding.

##### ***Recommendations***

Based on the finding of the present study, the following recommendations were made.

1. Government should assist farmers with grants and seeds after floods to boost their participation in agriculture and overcome food security issues that spreads round the nation.
2. Government should set up an agency (SEMA and NEMA) to regulate and coordinate flooding activities across the local government, state and national levels.
3. Farmers should be assisted with good and modern storage and marketing facilities to enhance profitability in event of any natural disaster especially flood which is the most common in Nigeria.
4. The Ministry of Agriculture and other stakeholders should embark on activities to aid farmers' fast recovery during flood.
5. Government should provide adequate amenities especially to the communities susceptible to flood disasters.
6. Scientific methods, equipment and tools should be used to enhance the timely and accurate prediction and reporting of weather information to farmers.
7. Public enlightenment should be undertaken using local languages to educate and bring weather reports and other information at the doorsteps of farmers.
8. Government should partner with other relevant stakeholders to organize periodic seminars and workshops to farmers on flood and other natural disasters.

The recommendations above is in agreement with Yocogan-Diano and Kashiwazaki when they stated that as an aid to the ravaging effect of this natural disaster, proposed assistance in the form of grants and seeds to farmers, setting up a regulatory agency to regulate and coordinate flooding activities, provision of good

marketing and storage facilities for food crops, encouraging and educating farmers on fast recovery, provision of adequate amenities to the communities, provision of correct and timely weather information or report for farmers and informing and warning farmers on the dangers of flooding as effective measures that could ameliorate the flight of victims of flood disaster Yocogan-Diano and Kashiwazaki (2009).

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