FLOODING AND LIVELIHOODS IN RURAL HOUSEHOLDS IN AHOADA WEST LOCAL GOVERNMENT AREA OF RIVERS STATE, NIGERIA.

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Abstract

The issue of flooding has been alarming over the years, and in recent times, its impact on human activities has been more severe. This study examined flooding and livelihoods in rural households in Ahoada West Local Government Area of Rivers State. The study employed a cross-sectional survey research design. The theoretical framework was the systems theory. It relates the physical environmental problem of flooding and its impact on humans. With a sample size of 400, data were collected using both primary and secondary sources. The primary source was a structured questionnaire, while the secondary sources were textbooks, journals, periodicals, etc. Data were analysed using descriptive statistics such as frequencies and percentages. The findings of the study show that flooding is a perennial problem in the study area. The devastating effects of flooding have caused environmental degradation and the destruction of traditional livelihoods. The study also established that the livelihood of those mostly affected are farmers and fishers due to the destruction of farmlands, pollution of river waters and destruction of forest resources by flood, leading to a decline in agricultural production, scarcity of some crops, poverty and migration. The study, amongst others, recommended that the government and necessary agencies should provide adequate camps (IDP camps), with adequate facilities for the victims whose houses are submerged by flood, till the flood recedes. The government should also give compensation, grants or financial assistance to enable the victims to cope after the flood, due to the destruction of their means of livelihood.

Keywords: Environmental degradation; Flooding; Households; Rural; Traditional Livelihoods

Introduction

Human beings found the environment a habitable place to live, and they utilise natural resources to satisfy their needs. They are highly dependent on the environment for means of sustenance and livelihood. A flood is water spreading to dry places, and that flooding can be natural and man-made. Excessive rainfall is one such natural factor (Njoku et al, 2020). In another study, Uyigue and Agho (2007) argue that extreme rainfall harms farming activities, as well as the adaptive strategies adopted by farmers. Echendu (2020), explained the difficulty of achieving Sustainable Development in Nigeria based on the challenges posed by the devastating floods, particularly the man-made causes of the problem. He advocated the implementation of existing laws related to the issue, while also advocating for collaborative spatial planning efforts by stakeholders to apply a suitable flood risk management strategy. The environment comprises humans, plants and animals, natural vegetation, fresh water, etc. All this put together makes up the ecosystem, which in turn works together to make the environment habitable and also provides sources for livelihood. The impact of flooding on the environment is vast. In some ways, it poses positive and negative impacts on the environment, but its impacts on humans are mostly negative. Topsoil is removed by floodwater just as water resources are affected by floods (Uyigue & Agho, 2007).

Parker and Thompson (2000) observed that in many African countries, floods pose a significant natural threat to life, health, and population. The floods have led to loss of human life, destruction of social and economic infrastructure and degradation of the already fragile ecosystem. According to Odubo (2014), due to the devastating flood of 2012, families were displaced from their settlement; homes were submerged by the flood. Human lives are lost to flooding every year, both adults and children, including infants. This may be as a result of drowning, spread of diseases through air and water pollution, and lack of proper treatment, because hospitals and clinics are submerged by floodwater. The flood and post-flood condition of the Southern Ijaw people in the south-south of Nigeria was severe (Odubo, 2014). Also, flooding damaged several infrastructures at the University of Ibadan in 2011 (Agbola, Ajayi, Taiwo & Wahab, 2012). Apart from infrastructure, flooding destroyed many farmlands, resulting in a sudden food shortage due to the loss of the entire harvest (Etuonovbe, 2011). Flooding is the major cause of natural disasters (Doocy, Daniels, Murray and Kirsch, 2013). Natural disasters such as flooding destroy agriculture (Kolawola, 2011). Impacts of flooding have been examined differently, and results have shown that it has devastating effects on human livelihood. Nnodim and Ezekiel (2020) identified that farming, fishing and hunting are the major means of livelihood for rural dwellers in the area observed. In the Niger Delta region of Nigeria, fishing is also affected by environmental problems, such as flooding (Chukwu, Wekpu and Ikebudu, 2018). Those who are traders are unable to trade with others within and outside, during flooding periods, shops and offices are shut down, and most times their goods are also destroyed.

Ani et al (2020) showed that flooding affects the economic lives of people, the environment, and animals. In another study, Agbonkhasa et al (2014) classified the effects of flooding on human livelihood as negative. Their study shows that flooding incidence can lead to massive destruction of investments and incomes. In a flood impact study by Mwape (2009), 94% of the respondents who are primarily farmers had their farms devastated.

Means of livelihood are any engagement or activities people do to provide or meet their daily needs. These include physical, financial, social and other activities people do to earn a living. Flooding destroys crops prematurely, resulting in food scarcity. Plants and animals which serve as food to man are also destroyed. Workers and traders could no longer have access to work. Flooding disrupts the daily activities of people trying to sustain their livelihoods. The Impacts of flooding on people living in coastal regions are severe (Wrathall et al, 2019).

Theoretical Framework

The theory adopted in this study is Systems Theory, propounded by Talcott Parsons. According to Parsons (1951), Social systems constitute interdependent subsystems whose stability is enabled by fulfilling universal functions. Normatively structured expectations enable social order. This explains the nexus between a natural phenomenon and its consequent influence on the behaviour of human beings as a social phenomenon. Parsons averred that for any society to stay stable, these four functions must prevail: Adaptation, Goal Attainment, Integration and Latency (AGIL). According to Luhmann (1990), systems theory is defined as the means by which a system handles changes in its environment. Society is seen as a network of functionally differentiated subsystems. Differentiation draws a nexus between the environment and changes in the system. Implying that a change to the environment will impact the behaviour or culture of the people.

This is apparent because new Behavioural patterns will automatically translate to handling the new changes. As earlier explained, systems theory fuses the social and the natural world to interpret human behaviour. Systems theory implies sub-units that are so connected by a web of relationships. This shows the strong links between the physical environmental problem of flooding and the socio-economic impact on human beings. Invariably, both are connected intricately. Meaning that a change in the former will influence the latter either positively or negatively. Most people in the study area rely on their habitat or physical environment for sustenance. The devastating impacts of flooding have led to environmental degradation, which negatively affects the socioeconomic activities and health of the populace. Flooding leads to the destruction of farmlands, pollution of rivers and destruction of forest resources.

The resultant impact on socioeconomic activities is poverty. Imperatively, the environmental and socio-economic impact of flooding leads to behavioural changes. Farmers and fishers, and other traditional livelihood practitioners, devise strategies to survive. This is to enable them to adapt to changes in the environment.

Methodology

This study employed a cross-sectional survey research design. The study area was Ususu Joinkrama in Ahoada West Local Government Area of Rivers State, Nigeria. The Local Government Area was purposively selected as it is among the most susceptible to flooding due to its proximity to the Orashi River. Ususu Joinkrama was selected from the Local Government Area due to the community's closeness to the Orashi River. The study population was 12,691. Given this population of 12,691, the Yamane (1967) formula was used to determine the sample size:

$$n = \frac{N}{1+N(e)^2}$$

Where;
N = total population
n = sample size
e = margin of error (0.05)

A simple random sampling technique was used to select respondents from the existing households in Ususu Joinkrama. The data were collected using both primary and secondary sources. The primary source was a questionnaire, while the secondary sources were textbooks, journals, periodicals, etc. Data for the study were analysed using descriptive statistics such as frequencies and percentages.

Findings of the Study

Table 1: Age of the Respondents

Options	**Frequency**	**Percent**
18-25	40	10.0
26-35	114	28.5
36-45	108	27.0
46-55	120	30.0
56 plus	18	4.5
Total	400	100

Source: Field survey, 2023

The age of the respondents in the analysis revealed that 40(10%) were 18-25 years, 114(28.5%) were 26-35 years, 108(27%) were 36-45 years, 120(30%) were 46-55 years, 18(4.5%) were 56 years and above.

Marital Status of the Respondents

Table: 2

Options	Frequency	Percent
Single	118	29.5
Married	198	49.5
Widowed	60	15.0
Divorced/Separated	24	6.0
Total	400	100

Source: Field survey, 2023

The analysis in table 2 revealed that 118(29.5%) were single, 198(49.5%) were married, 60(15%) were widowed, while 24(6%) were divorced or separated.

Table 3: Experience of flooding

Option	Frequency	Percent
Yes	400	100
No	0	0
Total	400	100

Source: Field survey, 2023

The analysis of the experience of flooding in the study area is shown in Table 3 above. The result revealed that 400(100%) confirmed that they experienced flooding, while none indicated that they did not experience flooding.

Table 4: How often flooding was experienced

Option	Frequency	Percent
Annually	354	88.5
Once every two years	18	4.5
Once every three years	21	5.25
Once every four years	7	1.75
Total	400	100

Source: Field survey, 2023

Table 4 analysed respondents' reports of how often they experience flooding in the study area. The analysis revealed that 354(88.5%) indicated that flooding occurred annually, 18(4.5.%) indicated that it occurred once in two years, 21(5.25%) indicated it occurred once in three years, while 7, representing 1.75%, indicated that it occurred once in four years.

Table 5: Year with the biggest and most devastating annual flood experience

Option	Frequency	Percent
2012	135	33.75
2018	12	3.0
2020	6	1.5
2022	244	61.0
All of the above	3	0.75
Total	400	100

Source: Field survey, 2023

Table 5 shows the year the respondents experienced the highest level of flooding in the area. The respondents indicated that the 2022 flood was the highest in the area's recent history. The analysis revealed that 244(61%) respondents indicated that the flood of 2022 was the biggest and most devastating, followed by 135(33.75%) who believed that the flood of 2012 was biggest, 12(3%) believed the flood of 2018 was biggest, 6(1.5%) considered the flood of 2020 as biggest, while 3 respondents representing 0.75% believed that all the floods were equally big.

Table 6: Any impact of flooding on Livelihoods in 2022?

Option	Frequency	Percent
Yes	330	82.5
No	70	17.5
Total	400	100

Source: Field survey, 2023

The analysis in Table 6 shows the effect of flooding. 330(82.5%) respondents indicated that they felt the effect of flooding, 70(17.5%) indicated that they did not feel the impact.

Table 7: Source of livelihood

Option	Frequency	Percent
Farming	286	71.5
Fishing	84	21.0
Hunting	6	1.5
Picking of snail	15	3.75
Palm oil processing	9	2.25
Total	400	100

Source: Field survey, 2023

The analysis of the livelihood sources in the study area, as shown in Table 7 revealed that 286(71.5%) engaged in farming, 84(21%) engaged in fishing, 6(1.5%) engaged in hunting, 15(3.75%) engaged in picking snails, and 9 respondents (2.25%) engaged in the palm oil processing business.

Table 8: Description of flood Impact on livelihood

Option	Frequency	Percent
Destruction of farmlands	196	49.0
Pollution of rivers	117	29.25
Destruction of forest resources	63	15.75
Destruction of buildings	24	6.0
Total	400	100

Source: Field survey, 2023

Table 8 shows the extent of the impact of flooding on the livelihood of the respondents. The finding revealed that most of the respondents, 196(49%), indicated that the flood destroyed farmlands, 117(29.3%) indicated it polluted rivers 63(15.8%) indicated that it destroyed forest resources, while 24(6%) indicated that the flood destroyed buildings in the area.

Table 9: Average monthly income before the 2022 flood

Option (Naira)	(Dollar)	Frequency	Percent
Below 10,000	Below $7.23	9	2.25
10,000 - 30,000	($7.23 – $21.70)	43	10.75
31,000 - 50,000	($22.43– $36.17)	207	51.75
51, 000 and above	($36.89 and above)	141	35.25
Total		400	100

Source: Field survey, 2023

Table 9 indicated that 207(51.75%) respondents indicated that they earned between N31,000 and N50,000 before the flooding in the area, 141(35.25%) indicated that they earned N51,000 and above while 9(2.25%) and 43(10.75%) indicated that they earned below N10,000 and N10,000 and N30,000 respectively in a month before the flooding that ravaged the area.

Table 10: Present average monthly income after the 2022 flood

Option (Naira)	(Dollar)	Frequency	Percent
Below 10,000	Below $7.23	27	6.75
10,000 - 30,000	($7.23 – $21.70)	307	75.75
31,000 - 50,000	($22.43– $36.17)	57	14.25
51, 000 and above	($36.89 and above)	13	3.25
Total		400	100

Source: Field survey, 2023

The analysis in Table 10 revealed that the present level of earnings of the respondents reduced owing to the flood that submerged their farmlands and destroyed crops. 307(75.75%) respondents revealed that they earned between N10,000 and N30,000 after the flooding took place, 57(14.25%) indicated that they earned between N31,000 and N50,000, 27(6.75%) indicated that they earned below N10,000, while 13(3.25%) indicated that they earned N51,000 and above, after the flood.

Table 11: Method of coping during flooding in 2022

Option	Frequency	Percent
Migrated from the community during the period of the flood	132	33.0
Relocated to an IDP camp	117	29.25
Received remittance from family and friends	19	4.75
Borrowed from family and friends	21	5.25
Moved to higher ground	111	27.75
Total	400	100

Source: Field survey, 2023

Table 11 shows that the respondents adopted different approaches to cope with the effects of the flooding. The analysis showed that out of the total respondents, 132(33%) indicated that they migrated from the community during the period of flooding, 117(29.25%) indicated that they relocated to an IDP camp, 111(27.75%) moved to higher grounds, 21(5.25%) indicated that they borrowed from family and friends while 19(4.75%) indicated that they received remittance from family and friends.

Discussion of Findings

The findings of the study show that flooding is a perennial problem in the study area and that the devastating effects of flooding have caused environmental degradation. The analysis revealed that most of the respondents explained that the flooding of 2022 was unprecedented and the most devastating. These findings support the assertion of Osawe et al. (2014) that Rivers State is one of the eight flood-prone coastal states in the country. The severity of flooding increased during the last decade due to a combination of factors, including increased population, poor drainage, climate change and low-lying topography (Williamson & Muti, 2018). It also resonates with the explanation that a primary cause of flooding in Ahoada West Local Government Area was the seasonal, intensive overflow of the Orashi River, which usually overflows its banks and floods communities. Another major reason for the flooding in the area is Prolonged and intense rainfalls, often during the rainy season (particularly from May to October), leading to water accumulation that overwhelms the environment (NEMA, n.d.). Among the communities, Ususu Joinkrama is more susceptible to river overflow due to its extremely low-lying elevation that makes it highly vulnerable to flooding due to its extremely low-lying elevation above mean sea level (Ususu Joinkrama, n.d.). The study also revealed the destruction of traditional livelihoods in the study area during the 2022 flood. From the study, the livelihood of those mostly affected are farmers and fishers due to the destruction of farmlands, pollution of rivers and destruction of forest resources by flood, leading to a decline in agricultural production, poverty and migration. This study also

assessed the impact of the floods on the livelihood of the people in the study area. Out of 400 respondents, 82.5% indicated that they felt the impact, while only 17.5% indicated that they did not feel the impact. In describing the effects, the analysis revealed that the majority of the respondents indicated that, in addition to other effects, their livelihoods were the most affected. This is in line with the study of Yakubu et al (2022), which stated that floods had caused a significant impact on households in Kogi Local Government Area of Kogi State, resulting from loss of businesses, loss of farmland, displacement, fatalities, hunger and starvation.

The study further identified different traditional livelihood sources in the study area. 71.5% are into farming, 21% are engaged in fishing, 1.5% are engaged in hunting, 3.75% are into picking snails, while 2.25% are engaged in the palm oil processing business. The study went on to establish a decline in income for farmers, fishers and other traditional livelihood practitioners in the study area due to the decline in earnings. The analysis revealed that most of the respondents (51.75%) averred that they earned between N31,000 and N50,000 monthly before the last flooding, 35.25% indicated they were earning N51,000 and above, while 2.25% and 10.75% established that they earned below N10,000 and N10,000 to N30,000 in a month before the flooding ravaged the area. The implication is that most of the respondents earned better before the flooding than during and after the flooding. For instance, the analysis revealed that the present level of earnings of the respondents has reduced owing to the flood that submerged their farmlands and destroyed crops. From the analysis, 75.75% respondents revealed that they now earn between N10,000 and N30,000 after the flooding, 14.25% indicated they earn between N31,000 and N50,000, 6.75% indicated that they earn below N10,000, while 3.25% indicated they earn N51,000 and above. This shows a drop in income for most after the flooding. This finding is further in line with the findings of Yakubu et al (2022) that flooding had caused environmental pollution, displacement, poverty, malaria and other diseases, loss of life and adverse effects on livelihood activities of persons in the study area.

Finally, the study revealed that the respondents adopted different methods to cope with the effects of flooding. From the findings, 33% indicated that they migrated from the community during the period of flood, 29.25% indicated that they relocated to an IDP camp, 27.75% indicated that they moved to higher grounds, and 5.25% indicated that they borrowed from family and friends, while 4.75% indicated that they received remittance from family and friends. The implication is that most of the respondents indicated that they migrated to other communities during the flood period, while some relocated to IDP camps provided for the victims. This shows that flood displacement influences migration actions by the populace. This corroborates Wang (2025) 's findings that, in developing countries, flood fatalities and displacement compel populations to move away from or into flood-prone areas due to resource needs.

Conclusion

This study concludes that flooding has caused severe environmental damage in the study area. Flooding destroyed physical infrastructure and caused significant declines in agriculture, leading to food insecurity, increased poverty, and reduced access to resources, as well as an increase in other social problems. The extent and frequency of flooding in recent times have severely affected

the major traditional livelihoods of the rural households, including the displacement of indigenous people through migration.

Recommendations

- Government and necessary agencies should provide adequate camps (IDP camps), with relevant facilities for the victims whose houses are submerged by flood, till the flood recedes.
- The government should ensure that all the destroyed infrastructure is rebuilt or repaired after the flood to aid movement and improve living standards.
- Increase public awareness to reduce the risk of flooding in Rivers State effectively. It is important to raise public awareness about preventative measures, such as understanding the importance of proper land and water management, the need to use protective materials to cover areas vulnerable to flooding, and the need for effective evacuation plans.
- The government should give the victims compensation, grants or financial assistance to enable them to cope after the flood, since their means of livelihood are destroyed.
- Construct adequate drainage and sewer systems. Investing in a robust drainage and sewer system can reduce flood risk in Rivers State. This system should be connected to proper channels that can effectively divert extra water away from vulnerable areas and reduce the risk of flooding.
- The government should provide modern varieties of crops, seedlings and fertilisers to enable farmers to grow their crops faster to reduce food scarcity in the affected areas.
- The government should advance flood risk management plans to manage any potential and existing flood risks.
- The government should invest in flood protection infrastructure to protect vulnerable communities.

Ethical Consideration

Respondents were duly informed that their involvement in the study was a voluntary exercise and that all information was for academic purposes. Also, they can abstain or withdraw from participating in the research at their discretion.

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