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# Act Of God Or Ignorance: Perception Of Rural Farmers On The Effect Of Climate Change And Flood Insurance

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**ABSTRACT**
In recent times, there have been increased reports of violent weather occurrences occasioned by climate change, such as flooding and hurricanes, among others. Global efforts have been geared towards avoiding, where possible, or mitigating, where unavoidable, the impacts of these extreme climatic conditions. However, studies have found that many people have refused to key into the global proactive efforts aimed at addressing these climate change challenges due to their beliefs that these events are acts of gods (Aofg) rather than natural hazards. Thus, this study using primary data sourced from farmers in the three senatorial districts of Bayelsa State, Nigeria, examines the perceptions of farmers on flood hazards and their reception of flood insurance as a tool to mitigate the impact of floods on their livelihood. Furthermore, the perspectives of the insurance providers are sourced to complement the discourse from the farmers. The study reveals that 73.9% of the farmers view floods as a risk worth insuring. On the direction of the impact of their belief, the study using the Structural Equation Model (SEM) confirms that the farmers' perception of the flood as a natural hazard has a significant effect on recovery strategy, readiness to sell insurance, and willingness to adopt insurance. Conversely, the Act of gods (Aofg) as the cause of the flood has a weak relationship with adopting a recovery strategy, and the readiness of insurance brokers to sell insurance to rural farmers. However, (Aofg) as the cause of flood has a strong relationship with willingness to adopt insurance. Recommendations to the key stakeholders, notably, government, insurance companies, community leaders cum farmers' associations are documented in the study.
**Keywords**: flooding and hurricanes, flood insurance, farmers, flood recovery strategies

## 1. INTRODUCTION

There have been increased reports of violent weather occurrences occasioned by climate change such as flooding, and hurricanes, among others across the world. Global efforts have been geared towards avoiding where possible or mitigating where unavoidable the impacts of these extreme climatic conditions. In Nigeria, annual flooding disasters have been witnessed in recent years. As pointed out by (Echendu, 2020), flooding in Nigeria mostly occurs during the rainy season as a result of increased precipitation and sea level rise which has been linked to the duo of climate change and global warming. This confirms the United Nations assertion that global disasters constitute more of events that are hydro-metrological. These events include tsunamis, hurricanes, and flooding (United Nations, 2007). Other climate change events witnessed in Nigeria include; rising temperature and variation in annual rainfall,

drought and desertification, land degradation, and loss of species of plants and animals. Rainfall variation, increased precipitation, and rising sea levels are projected to continue and will worsen the flooding situation in Southern Nigeria, especially in the Niger Delta region (Haider, 2019).

The Niger Delta region of Nigeria is considered the largest wetland in the world with a land space spanning over 20,000 km2 (Olaife, et al., 2022). It is bordered by the Atlantic Ocean, having the largest mangrove swamps in Africa with lots of creeks, rivers, and estuaries (Izah, 2018). It houses the southern states of Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers State (Ochuba & Idoniboye-Obu, 2020). After the 2012 flood which is considered the biggest flood disaster in Nigeria in the past 50 years, a Post Disaster Needs Assessment (PDNA) was carried out by the United Nations, European Union, and World Bank at the instance of the Federal Government of Nigeria through its agency, National Emergency Management Agency (NEMA). The report which was presented in 2013 revealed that Bayelsa State was the worst hit by the flood with damage and loss valued at N596 billion or its equivalent of US$1,835 per capita. The same report revealed that the agricultural sector was greatly affected with huge damage and loss of N293 billion (NEMA, WB, 2013). The geographical location of the state makes it susceptible to constant flooding. As noted by (Owutuamor & Ukpong, 2021) the people of Bayelsa state and the region at large are predominately farmers, so incessant flooding poses a big threat to their livelihood.

Several governments and scholars have invested enormous time and resources towards finding lasting solutions to flood hazards, or better still building the resilience of the residents towards mitigating the impact of flooding. Among such efforts by the Nigerian government is the setting up of the Nigerian Agricultural Insurance Cooperation in 1993 to provide insurance to Farmers at subsidized premium. Besides the government's insurance facility, private insurance companies also have taken up flood insurance either as a stand-alone insurance product or as a bundle of insurance packages. Agricultural insurance and by extension flood insurance have witnessed a retarded advancement due to Farmers' low income, absence of infrastructural support, post-disaster relief packages, insurance data requirements, and moral or superstitious beliefs (Ehiogu & Chidiebere-mark, 2019). As observed by (Olorundare, 1998), superstitious beliefs constitute a major obstacle to the adoption of an improved life, this includes the uptake of insurance (flood insurance). This is because most farmers attribute flooding to strange acts of gods rather than natural hazards that can be mitigated or completely averted. In fact, studies by Raimi and Bieh (2021) corroborate this as a good number of the participants attributed climate change and the associated consequences to the anger of their gods.

This study, therefore, seeks to unravel the perception of rural farmers on the effects of climate change; the chief of which is flooding, and the possibility of taking up flood insurance to mitigate its impact. This study therefore seeks to understand the perceptions of rural Bayelsa farmers regarding flood events and also the possibility of ameliorating the devastating effects of flooding in the State using flood insurance risk treatment options. Also, the study investigates the willingness of insurance brokers to sell flood insurance to rural Bayelsa farmers. The paper is structured as follows; immediately after the introduction comes an overview of flooding in Nigeria, followed by the study methodology, then presentation and discussion of findings, and finally comes the conclusion and policy recommendations.

## 2. Brief on Flooding in Nigeria

Tawari-fufeyin, et al., (2015) categorize floods as extreme weather events which is linked to the duo monster of climate change and global warming. Extreme weather events are common effects of climate change. Flooding occurs when the land surface infiltration capacity has been exceeded. That is the soil is no longer able to absorb more water either from the rain or from the river, this results in surface runoff which is known as flooding. Zurich, (2022) identified three major types of flood; Fluvial flood also known as river flood, Pluvial flood which comes as a flash flood or surface flood, and Coastal flood. Pluvial flood precisely flash flood is adjudged the most dangerous and destructive flood due to its perculiarity of giving short notice, very high velocity of the flood water flow, and accompanying hurting debris. This was exactly the type of flood witnessed in Nigeria in 2012. As reported by (Agada & Nirupam, 2015) heavy rainfall caused an astronomical rise in the level of water in Lagdo Dam in

Cameroun which necessitated immediate release of water from the dam to forestall structural damage. This resulted in what is today known as the biggest flood in Nigeria in the past 50 years.

Aside from the 2012 flood, Nigeria has had a fair share of flooding. There have been a handful of flood events in various parts of Nigeria. These floods are prominent at the inception of the rainy season and towards the end; that is between April and October. The ones at the inception are usually occasioned by blocked drains and waterways as a result of indiscriminate dumping of refuse. Also, towards the end of the rainy season when the ground is perceived to be saturated, that is around October, the ground no longer absorbs water, and this results in surface runoff. The last instance depicts what happened during the 2018 flood in 34 out of the 36 states of the federation as reported by (Red Cross, 2018). Also, about 1.9 million people were affected, 82,000 houses were destroyed, 210,000 people were displaced and lots of farmlands and livestock were damaged.

As part of efforts towards solving flood problems in Nigeria, studies have found that there is no integrated Flood Risk Management (FRM) framework in Nigeria. A study by Oladokun and Proverbs (2016) discovered that there is no integrated FRM system in Nigeria as a country. The study also uncovered that there is a lack of interagency coordination, substandard and weak infrastructural development, and no empowerment of entrepreneurs to provide FRM solutions and a multidisciplinary platform for originating effective programs and policies for FRM in Nigeria. This position was collaborated by a recent study by (Ejemeyovwi, et al., 2022) where they found that disaster management efforts in Nigeria are not effectively managed and quantified. However, considering the peculiar nature of Bayelsa State as a riverine state, Nkwunonwo, Whitworth, and Baily (2015) proffered flood mapping and well-built-up cities as possible solutions to flooding in Bayelsa State. Special peril insurance which also covers flood insurance was suggested by Tawari-fufeyin, et al (2015) as a treatment option for flood risk. Elsewhere in Bangladesh (Akter, et al., 2018) found that flood insurance for rural households was only made possible with third-party support as the householders could not afford insurance premiums. The posity of funds that hindered these rural Bangladesh dwellers from being able to afford insurance premiums might be the case among rural Bayelsan farmers as an earlier study by Owutuamor and Ukpong (2021) found that rural dwellers in Bayelsa State earn less income compared to their urban counterparts. This income disparity places the rural dwellers at the lower end of the income ladder.

All efforts geared towards ameliorating the impact of the flood are, however, dependent on the view of the affected rural farmers. When Farmers view floods as natural disasters or an acts of god that are unpreventable and unpredictable, they will be unwilling to consciously source for prevention where possible or to mitigate its impact (PMnews, 2016). Moreover, Professional Risk Managers have made a distinction between natural disasters and natural hazards. In their words, most natural disasters are widespread and often beyond the scope of human prevention. Natural hazards on the other hand are natural events in a given area with occupants, with the capacity of inflicting bodily harm and destruction of properties (Weichselgartner & Bertens, 2000). In essence, widespread destruction in an unoccupied location like a desert is a natural disaster or act of gods (Aofg). A similar event in a city center is considered a natural hazard. Natural hazards can be contained by effective preparedness, response, and mitigation activities (Okrent, 1980). Flood insurance comes in handy as a mitigating activity or risk treatment option.

## *3.* METHODOLOGY

This study was conducted in Bayelsa State, Southern part of Nigeria. Bayelsa State was created in 1996 with its capital in Yenagoa. The State's population according to the 2006 population census projected to 2020 is 2,278,000. The primary occupation of residents of the State as found by Owutuamor and Ukpong (2021) include: fishing, farming, lumbering, palm wine tapping, local gin distillation, civil service, and trading.

In this study, the three senatorial districts of the State are covered with each district being represented by a farming community. They include: Sampou representing Bayelsa Central Senatorial District, Elebele representing Bayelsa East Senatorial District, and Ebedebiri in Bayelsa West Senatorial District. These communities were strategically selected based on the volume of food they add to the State's food basket.

The study employed primary data obtained through a structured questionnaire distributed using the snowball technique. As defined by Dudovskiy (2018) snowball technique is a non-probability method where the research participants recruit or refer other participants for the study. This technique was adopted because given that not all the community residents are engaged in farming, the study engaged Community Development Chairpersons (CDC), who know the community's residents and, in turn, recruited known farmers in the various communities as the study respondents. The farmers were both animal and crop farmers. This is because there is no clear distinction between the farming groups as they do both animal and crop farming depending on the season of the year. The visit was done every Monday and Thursday evenings for nine weeks that is three weeks per community. A total of 300 copies of the questionnaire were distributed with 100 in each of the three communities. In Sampou Community, 85 copies were completed and returned (85% response rate). In the Elebele Community, 92 copies were completed and returned (95% response rate), while in the Ebedebiri Community, 87 copies were completed and returned (87% response rate). The study therefore was based on the 264 responses. The demographic distribution considered includes an age range of 18 and above and farming experience of 2 years and above.

On the part of the insurance brokers, the study engaged all the insurance companies in the Yenagoa metropolis numbering 14. Out of this number, one is a federal government-owned insurance company. This company has the mandate of providing insurance coverage to farmers and is the only one that has flood insurance as a stand-alone insurance package. The remaining 13 insurance companies, which are privately owned have flood insurance under bundles of products with different product names such as; fire and other peril products, and special peril products. In effect, they do not have a specific package for the flood. The opinions of all the marketing staff were sorted with demographic specifications of two years and above in insurance brokerage. The study employed oral interviews for a few marketers (as they were too busy to complete the questionnaire), while others especially the branch leaders completed the written questionnaire. A total of 30 questionnaires were issued and retrieved from the insurance companies.

The data derived from the retrieved questionnaires were analyzed using descriptive statistics and the Econometric tool of Structural Equation Model (SEM) based on the Heterotrait-monotrait (HTMT) ratio of correlations method for the determination of discriminant validity. The descriptive statistics were used to determine the number of farmers and insurance brokers in each of the study questions. While SEM was used to investigate the direction of impact among the key constructs.

## 4. RESULTS AND DISCUSSIONS

### *4.1 Descriptive Statistics*

The study presents the descriptive statistics in Tables 1 to 3 herein.

***Table 1: Causes of Flood Risk***

| Farmers' Belief About Flooding | Natural Disaster (ND) | An Act of gods (Aofg) |
|---|---|---|
| Frequency | 195 | 69 |
| Percentage (%) | 73.9 | 26.1 |

Source: The Author's

In Table 1, it is evident that over 70% of the farmers understand that flood is a natural disaster that if well managed, its impact can be minimized. This percentage of farmers form the bulk that employs such strategies as using improved seedlings that can withstand floods and buying insurance as post-flood recovery plans. This implies that there is a potentially huge market for flood insurance should the insurance brokers be willing to drive rural sales of flood insurance. Again, less than 30% of the farmers whose perception of the flood is that it is an aftermath of offending the gods leave everything to chance. They are aversed to the adaptation of improved seedlings as they are stocked with the nonimproved variants of seedlings which hardly withstand the damaging effects of flood. As Olorundare (1998) rightly

observed, belief in superstition hinders the adoption of science and technology for mitigation of damaging flooding events among this group of farmers.

As indicated in Table 2, number 1 shows that out of the 195 farmers who understood that flood is a risk that should be guarded against, 50 farmers representing 25.6% of this group of farmers declined the ability to provide documents needed for flood insurance. This is not unconnected with claims by Insurance Journal (2020) that Nigeria's insurance market potentials are grossly underutilized since there are inappropriate implementation of mandatory retail insurance lines as well as inadequate awareness among insurance consumers. The literacy level among these farmers hinders their free flow with Western practices and processes. Also, most of the documents required by insurance companies for insurance purposes are usually not within the reach of their potential customers. For instance, a survey plan is a critical document for insurance of landed properties in Nigeria, but most lands especially in the rural areas do not have survey plans or any formal documents as they are mostly ancestral lands. This was confirmed by the finding of Africa Check (2015) that less than 3% of lands in Nigeria are formally registered. This poses a great deal of challenges in brokering an insurance transaction amongst rural farmers.

**Table 2: Readiness of Rural Farmers to Adopt Flood Insurance**

| S/N | Indicators | Yes | Percentage(%) | No | Percentage(%) |
|---|---|---|---|---|---|
| 1. | Readiness to Insure Farm And provide needed documents for insurance | 145 | 74.4 | 50 | 25.6 |
| 2. | Willingness to embrace Collaborators for Insurance premium | 161 | 82.6 | 34 | 17.4 |
| 3 | Able and willing to Pay insurance premium | 19 | 7.2 | 176 | 90.2 |

Source: The Author's

161 farmers representing 82.6% of those willing to embrace insurance for their farms are ready to work with third-party collaborators who can pay insurance premiums for them. This is in line with the emphasis by Honda (2021) that external collaboration is vital for achieving certain projects that are of high importance to rural dwellers. This follows the realization that only 19 farmers representing 7.2% of our respondents can afford insurance premiums. 176 farmers representing 90.2% of our respondents cannot afford insurance premiums. This confirms the findings of Owutuamor & Ukpong (2021) that there is posity of funds among rural dwellers. The income of these farmers can barely afford them decent lives and livelihoods.

*Table 3:* ***Readiness of Insurance Brokers to Sell Flood Insurance to Rural Farmers***

| Readiness to Sell Flood Insurance to Farmers | Yes | No |
|---|---|---|
| Frequency | 12 | 18 |
| Percentage(%) | 40 | 60 |

Source: The Author's

Table 3 shows that out of the 30 insurance brokers that responded, 12 representing 40% of the respondents are ready to sell flood insurance to the rural farmers. 18 brokers representing 60% of the respondents expressed reservation. This according to them is due to the inability of most farmers to afford premiums for their farms and the fact that documentation will be a very difficult issue to deal with. This conforms with findings by Mohammed & Mukhtar (2015) that low income level, illiteracy, and inadequate infrastructure are some of the factors that hinder insurance companies from penetrating rural areas in Nigeria.

### *4.2 Empirical Results from the Structural Equation Model*

The results from the analysis of the variables using structural equation modeling (SEM) are presented and discussed in this section.

***Table 4 Construct validity and Reliability***

| | **Loading** | **VIF** | **P value** | **AVE** | **Composite Reliability** | **Cronbach's Alpha** |
|---|---|---|---|---|---|---|
| Constructs | **≥ 0.7** | **<3.0** | **<.05** | **≥0.5** | **≥ 0.8** | **> 0.7** |
| **Causes of Flood** | | | | **0.695** | **0.819** | **0.775** |
| Natural Disaster (ND) | 0.902 | 1.421 | 0.000 | | | |
| Acts of gods (Aotg) | 0.758 | 1.217 | 0.000 | | | |
| **Willingness to Adopt Insurance (WtDI)** | | | | **0.763** | **0.906** | **0.844** |
| Third-party collaboration | 0.909 | 1.444 | 0.000 | | | |
| Documentations | 0.819 | 2.578 | 0.000 | | | |
| Premium Payment Ability | 0.890 | 2.568 | 0.000 | | | |
| **Flood Recovery Strategies (FRS)** | | | | **0.643** | **0.844** | **0.729** |
| Personal Savings | 0.760 | 1.367 | 0.000 | | | |
| Family/Friends Supports | 0.778 | 1.198 | 0.000 | | | |
| Government Support | 0.864 | 2.359 | 0.000 | | | |
| **Readiness to Sell Insurance for Rural Farmers (RtSIfRF)** | | | | **0.834** | **0.938** | **0.901** |
| Flood Insurance Accessibility | 0.901 | 1.487 | 0.000 | | | |
| Insurance Package Viability | 0.926 | 1.692 | 0.000 | | | |
| Readiness to Service Rural Farmers | 0.913 | 1.204 | 0.000 | | | |

Source: The Author's

The factor loadings of all the measurement items for causes of flood, willingness to adopt insurance, flood recovery strategies, and readiness to sell insurance for rural farmers are depicted in Table 4. Cronbach alpha, average variance extracted (ave) analysis, and composite reliability were investigated to ascertain validity and Reliability. When determining construct validity, the study also considered convergence and discriminant validity. Convergent validity is evident in the association between causes of flood, willingness to adopt insurance, flood recovery strategies, and readiness to sell insurance for rural farmers. The variance inflation factor (IVF) was used to determine if the model is free from common method bias. All the values of IVF were less than 3.3. Thus, the model is free of common method bias.

***Table 5 Discriminant Validity***

| | **Aofg** | **FRS** | **ND** | **FtSIfRF** | **WtAI** |
|---|---|---|---|---|---|
| Aofg | | | | | |
| FRS | 0.357 | | | | |
| ND | 0.274 | 0.563 | | | |
| FtSIfRF | 0.487 | 0.307 | 0.652 | | |
| WtAI | 0.578 | 0.235 | 0.585 | 0.757 | |

Source: The Author's

The study used the heterotrait-monotrait (HTMT) ratio of correlations method for the determination of discriminant validity as depicted in Table 5. Meanwhile, all the HTMT values must be less than 0.85

which is the critical value before discriminant validity can be established. The HTMT values generated are significantly different from 1, and the upper confidence intervals are below the one value. Therefore, the discriminant validity is established.

***Table 6 Model Fit***

| | Estimated |
|---|---|
| SRMR | 0.076 |
| d_ULS | 1.772 |
| d_G | 0.425 |
| Chi-Square | 299.991 |
| NFI | 0.903 |

Source: The Author's

Table 6 displays the model fit of the relationship between causes of flood, willingness to adopt insurance, flood recovery strategies and readiness to sell insurance for rural farmers. Each model fit index was determined to be satisfactory. SRMR was used to determine the model fit. The acceptable threshold for SRMR should be less than 0.08. The SRMR value for this model was 0.076. This study's NFI estimate is 0.903, exceeding the benchmark of 0.90, with a chi-square value of 299.991.

The Q2 values were also used to determine the PLS-SEM predictive relevance of the measurement constructs and indicator data points. The Q2 values for FRS, RtSIfRF, and WtDI are 0.162, 0.393, and 0.331, respectively, all of which are greater than zero. This implies that the PLS path model is predictive of the constructs. Similarly, F-square was used to calculate the size of the effect. Table 4 shows that the Natural Disaster f-square values of FRS, RtSIfRF, and WtDI are 0.228, 0.540, and 0.229 respectively. Also, the act of the gods f-square values of FRS, RtSIfRF, and WtDI are 0.170, 0.171, and 0.293, respectively. This means that the sample effect is considered to be significant.

***Table 7 Relationship between Natural Disaster and Flood Recovery Strategies***

| | **Path Coefficient** | **R-Square** | **Std. Dev** | **T-statistics** | **P-value** | **Remarks** |
|---|---|---|---|---|---|---|
| ND ➡ FRS | 0.420 | 0.176 | 0.079 | 5.320 | 0.000 | Significant |
| ND ➡ RtSIfRF | 0.548 | 0.300 | 0.066 | 8.276 | 0.000 | Significant |
| ND ➡ WtAI | 0.422 | 0.178 | 0.075 | 5.632 | 0.000 | Significant |
| Aofg ➡ FRS | 0.233 | 0.055 | 0.118 | 1.977 | 0.048 | Significant |
| Aofg ➡ RtSIfRF | 0.308 | 0.095 | 0.080 | 3.857 | 0.000 | Significant |
| Aofg ➡WtAI | 0.418 | 0.175 | 0.075 | 5.550 | 0.000 | Significant |

Source: The Author's

Table 7 depicts the relationship between natural disasters (ND) as the cause of flood and flood recovery strategies, readiness to sell insurance for rural farmers, and willingness to adopt insurance. The findings show that natural disaster (ND) as the cause of flood has a significant effect on flood recovery strategies, readiness to sell insurance for rural farmers, and willingness to adopt insurance. Specifically, natural disaster (ND) as the cause of flood has a significant effect on flood recovery strategies at ($\beta$= 0.420, $R^2$=0.176, P-value =0.000 <0.05). The Path coefficient of 0.420 implies the belief that natural disaster (ND) as the cause of flood has a fair significant effect on the flood recovery strategy. The $R^2$ value of

0.176 indicates that a 17.6% variance in flood recovery strategies can be explained by the belief that a natural disaster (ND) is the cause of the flood.

Moreover, natural disaster (ND) as the cause of flood has a significant effect on readiness to sell insurance for rural farmers at ($\beta$= 0.548, $R^2$=0.300, P-value =0.000 <0.05). The Path coefficient of 0.548 implies that the belief that natural disaster (ND) is the cause of flood has a moderately significant effect on readiness to sell insurance for rural farmers. The $R^2$ value of 0.300 indicates that a 30.0% variance in readiness to sell insurance for rural farmers can be explained by the belief that natural disaster (ND) is the cause of the flood. Furthermore, natural disaster (ND) as the cause of flood has a significant effect on willingness to adopt insurance at ($\beta$= 0.422, $R^2$=0.178, P-value =0.000 <0.05). The Path coefficient of 0.422 implies the belief that natural disaster (ND) as the cause of flood has a reasonably significant effect on willingness to adopt insurance. The $R^2$ value of 0.178 indicates that a 17.8% variance in willingness to adopt insurance can be explained by the belief that a natural disaster (ND) is the cause of the flood.

Table 7 also describes the relationship between the act of the gods (Aofg) as the cause of flood and flood recovery strategies, readiness to sell insurance for rural farmers, and willingness to adopt insurance. The findings show that the act of the gods (Aofg) as the cause of flood has an effect on flood recovery strategies, readiness to sell insurance for rural farmers, and willingness to adopt insurance. Specifically, the act of the gods (Aofg) as the cause of the flood has a significant effect on flood recovery strategies at ($\beta$= 0.233 $R^2$=0.055, P-value =0.000 <0.05). The path coefficient of 0.233 implies that the belief that the act of the gods (Aofg) is the cause of flood has a weak significant relationship with flood recovery strategy. The $R^2$ value of 0.055 indicates that a 5.5% variance in flood recovery strategies can be explained by the belief that the act of the gods (Aofg) is the cause of the flood.

In a related development, the act of the gods (Aofg) as the cause of flood has a significant effect on readiness to sell insurance for rural farmers at ($\beta$= 0.308, $R^2$=0.095, P-value =0.000 <0.05). The Path coefficient of 0.308 implies that the belief that the act of the gods (Aofg) is the cause of flood has a weak significant relationship with readiness to sell insurance for rural farmers. The $R^2$ value of 0.095 indicates that a 9.5% variance in readiness to sell insurance for rural farmers can be explained by the belief that the act of the gods (Aofg) is the cause of the flood.

Similarly, the act of the gods (Aofg) as the cause of the flood has a significant influence on the willingness to adopt insurance at ($\beta$= 0.418, $R^2$=0.175, P-value =0.000 <0.05). The path coefficient of 0.418 implies that the belief that the act of the gods (Aofg) is the cause of flood has a reasonably significant relationship with willingness to adopt insurance. The $R^2$ value of 0.175 indicates that a 17.5% variance in willingness to adopt insurance can be explained by the belief that the act of the gods (Aofg) is the cause of the flood.

The summary of the path coefficient regarding whether flooding is perceived as a natural disaster (ND) or act of gods (Aofg) as well as the willingness of farmers to subscribe to insurance policies and their recovery strategies are provided in Figure 1.

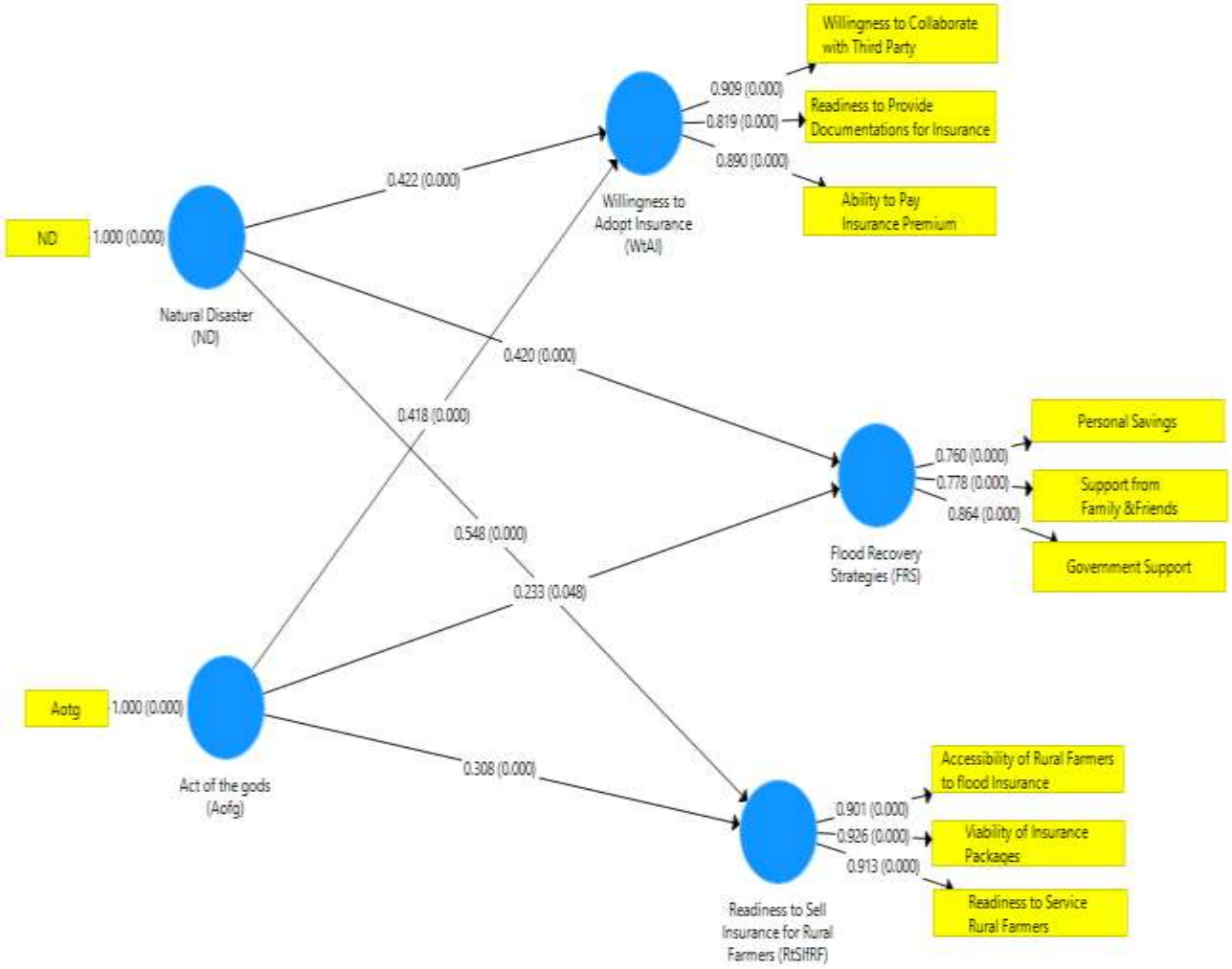


***Figure 1: Causes of Flood, Willingness to Adopt Insurance, Flood Recovery Strategies and Readiness to Sell Insurance***
Source: The Author's

## *5.* Conclusion and Policy Recommendations

There are rural farmers in Nigeria, specifically in Bayelsa State who do not believe that flood is a climate change event that is worth mitigating against, but rather an act of gods which they cannot control. While a large percentage view flood as a risk worth guarding against using flood insurance, the majority of them cannot provide the necessary documents to procure insurance nor can they afford insurance premiums. They are largely disposed to third-party collaboration for payment of insurance premiums. The insurance brokers equally are reluctant to sell flood insurance to rural farmers because of the same reason of inadequacy of finance and needed documents.

As part of policy measures, this study recommends that extension services should be reintroduced in rural areas, especially in farm settlements to address illiteracy and increase awareness of business enhancement practices such as insurance. Governments at all levels should take the issue of land documentation seriously. This will enable proper accountability for all lands available in the country and also make them ready instruments to better the lots of rural Farmers. As a way of turning disaster into benefits, governments at all levels and its agencies such as the Niger Delta Development Commission (NDDC), and the Ministry of Niger Delta Affairs, among others should consider the construction of Dams along the

tributaries; especially in the Niger Delta to serve as a buffer in events of a flash flood. Such Dams can act as economic catalysts by providing avenues for fishing, irrigation, and power generation especially now that the country is short of wattage. Also, the issue of collaboration should be taken seriously as it is a sure way of getting rural farmers to embrace modern business practices.

Community leaders and farmers associations can form alliances or cooperatives to raise funds where possible or attract funding from donor agencies with the aim of financing flood insurance. An example in this regard is the Pagwuni Women's Group (PWG) 'money-box' financing model where Ghanaian women organize themselves in groups, and make regular contributions which they eventually get back at agreed periods for the sole aim of financing their purchase of farm inputs (Karakara, et al., 2021). The insurance companies can work in tandem with the community leaders who can then liaise with the farmers in groups to make periodic contributions (for example on the market days) towards funding flood insurance premiums. This will go a long way in reducing the transaction cost of 'administering' insurance packages to the farmers, on the one hand, and willingness to subscribe to insurance packages, on the other.

**REFERENCES**

Africa Check. (2015, 11 23). Factsheet: Who Owns the Land in Nigeria. Africa Check.

Agada, S., & Nirupam, N. (2015). A Serious Flooding Event in Nigeria in 2012 With Specific Focus on Benue State: A Brief Review. Natural Harzards, 77, 1405 - 1414.

Akter, S., Brouwer, R., Van Beukering, P., French, L., Sliver, E., & Choudhury, S. (2018). Exploring the feasibility of private micro flood insurance provision in Bangladesh. Disaster, 287 - 307.

Berezi, O., Obafemi, A., & Nwankwoala, H. (2019). Flood Vulnerability Assessment of Communities in the Flood Prone Areas of Bayelsa State, Nigeria. International Journal of Geology and Earth Sciences, 2395-647(5, no 3), 19 - 36.

Dudovskiy, J. (2018). The Ultimate Guide to Writing a Dissertation in Business Studies: A Step by Step Assistance. E-Book: Research-methodogy.net.

Echendu, A. (2020). The impact of flooding on Nigeria's sustainable development goals(SDGs). Ecosystem Health and Sustainability, *6*(1), 6:1.

Ehiogu, C., & Chidiebere-mark, N. (2019). Challenges and prospects of agricultural insurance market development in achieving sustainable development goals (SDG) 8 in Nigeria. African Journal of Applied Research, *5*(2), 131 - 149.

Ejemeyovwi, J., Osabuohien, E., Ihayere, O., Omosehin, O., & Igbinoba, A. (2022). Institutional Diagnosis of Disaster Risk Management in Nigeria: Towards the Design of a New Framework. In R. Balgah, & J. Kimengsi, Disaster Management in Sub-Saharan Africa: Policies, Institutions and Processes (pp. 123 - 144 ). Bingley: Emerald Publishing Limited.

Haider, H. (2019). Climate change in Nigeria: impacts and responses. Preventionweb, 38.

Honda, Y. (2021). Energizing Communities through Partnership with External Actors; Small Scale Hydropower Projects in Japan. Journal of Asian Rural Studies, 63 - 77.

Hong Kong Red Cross. (2018, October 24). Report on Nigeria. Retrieved September 10, 2019, from Reliefweb. int: http://www.reliefweb.int/report/nigeria

Insurance Journal. (2020). Nigeria Insurance Market Faces Challenges to Realize its Potential: AM Best. Insurance Journal.

Izah, S. (2018). Ecosystem of the Niger Delta region of Nigeria: potentials and threats. Biodiversity International Journal, *2*(4), 338 - 345.

Karakara, A., Osabuohien, E., Nwachukwu, J., & Osabuohien, R. (2021). Innovation in savings and behavior of agricultural business support for women: The Ghanaian 'Money-Box'. African Journal of Reproductive Health, *25*(5), 146 - 157.

Mohammed, A., & Mukhtar, S. (2015). Prospects of Micro-Insurance in the Rural Areas in Nigeria. European Scientific Journal, 66 - 76.

NEMA, WB. (2013). Post Disaster Needs Assessment 2012 Floods. Abuja: Federal Republic of Nigeria with Technical Support from the World Bank, EU, UN and Other Partners.

Nkwunonwo, U., Whitworth, M., & Baily, B. (2015). Flooding and Flood Ris Reduction in Nigeria: Cardinal Issues. Journal of Geography and Natural Disaster, 67 - 74.

Nzeribe-George, G., Nwokoye, E., Uwajumogu, N., & Ezenekwe, U. (2014). What Implication Does 2012 Flood Disaster Have on the Nigerian Economy? Nigerian Journal of Energy and Environmental Economics, 15 - 30.

Ochuba, O., & Idoniboye-Obu, S. (2020). Environmental pollution in the Niger Delta; chronicling policy responses. South-south journal of Humanities and International Studies, 3(2), 19 - 37.

Okrent, D. (1980). Comment on Societal Risk. *Science, 208*, 372 - 375.

Oladokun, U., & Proverbs, D. (2016). Flood Risk Management In Nigeria: A review of the Challenges and Opportunity. International Journal of Environmental Studies, 485 - 497.

Olaifa, E., Osabuohien, E., Issahaku, H. & Matthew, O. (2022). Oil spillage and captured fish production in the Niger Delta region of Nigeria. International journal of energy economics and policy, 12(3), 175 - 183.

Olorundare, S. (1998). Superstitious Beliefs as Constraints in the Learning of Science. Nigerian Journal og Guidance and Counselling, *6*(1&2), 133 -150.

Owutuamor, Z., & Ukpong, I. (2021). Comparative Analysis of Income Differentials Between Men and Women in Bayelsa State, Nigeria. Journal of Asian Rural Studies, *5*(1), 56-62.

PMnews. (2016, 07 15). Superstitious Beliefs Disturbs Relocation of Flood Victims in Bauchi. Retrieved from httppmnewsnigeria.com/2016/07/15/superstitious-beliefs-disturb-relocation-of-flood-victims-in-Bauchi/: https://pmnewsnigeria.

Raimi L. & Bieh, N. N. (2020). Towncrying for knowledge dissemination on climate change to non-literate rural people in Nigeria. International Journal of Scientific Research in Humanities, Legal Studies & International Relations, July, 5(1), 155-168.

Red Cross. (2018). Nigeria Floods 2018: Work Report *1*. Hong Kong: Reliefweb.

Tawari-fufeyin, P., Megbuwe, P., & Adam, O. (2015). Some Aspects of a Historic Flooding in Nigeria and its Effects on Some Niger Delta Communities. American Journal of Water Resources, 46 -52.

United Nations. (2007). Hyogo Framework for Action 2005 - 2015: Building the Resilience of Nations and Communities to Disasters. Geneva: UN.

Weichselgartner, J., & Bertens, J. (2000). Natural Disasters: Acts of God, Nature or Society? On the Social Relation to Natural Hazard. Management Information System.

Zurich. (2022, June 08). Three Common Types of Flood Explained. Flood and Water Damage, pp. https://www.zurich.com/en/knowledge/topics/flood-and-water-damage/three-common-types-of-flood.