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Effect of Economic Resilience on Flood Disaster Mitigation Among Members of Agricultural Cooperatives in Anambra Agricultural Zone, Anambra State, Nigeria

Nkechi C. Ojiagu[1], Usman Usman[2]

[1]Department of Cooperative Economics and Management, Nnamdi Azikiwe University, Awka, Nigeria
[2]Department of Cooperative Economics and Management, Kaduna Polytechnic, Kaduna, Nigeria

ABSTRACT

This study examined the effect of economic resilience on flood disaster mitigation among members of agricultural cooperatives in Anambra Agricultural Zone, Anambra State, Nigeria. Specifically, the study investigated the relationships between business base diversification and early warning systems, as well as between government good governance and emergency supply. A descriptive survey research design was adopted, with data collected from 354 cooperative members selected through a multistage sampling technique. The instrument for data collection was a structured questionnaire, validated through face and content validity, while reliability was established using Cronbach Alpha. Data were analyzed using descriptive statistics and Pearson Product Moment Correlation Coefficient (PPMCC). Hypotheses were tested at a 5% level of significance. Findings revealed a strong and statistically significant positive relationship between business base diversification and early warning systems ($r = 0.933$, $p < 0.05$), indicating that diversification enhances members' capacity to anticipate and respond to flood risks. Similarly, a significant positive relationship was found between government good governance and emergency supply ($r = 0.938$, $p < 0.05$), suggesting that effective governance structures improve the availability and distribution of relief resources during disasters. The study concluded that economic resilience, strengthened through cooperative-driven initiatives and supportive governance frameworks, plays a critical role in mitigating flood disasters. The study recommended that agricultural cooperatives promote income diversification and integrate early warning mechanisms, while government agencies should enhance transparency, accountability, and disaster preparedness systems to ensure timely emergency response. These measures will collectively improve resilience and reduce vulnerability among cooperative members in flood-prone areas.

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INTRODUCTION

Disasters are an intrinsic part of the environment and the public gets impeded by the recurring disasters which affect human life, living organisms, properties, materials and the country's economy (Kummar et al, 2021). Thus natural disasters such as floods have economic consequences, which can be managed by some mitigation consequences that result in vulnerability reduction minimizing the losses and damages. A flood is a natural disaster (event) that disrupts the functioning of the economic system, with a remarkable negative impact on assets, production factors, output employment, consumption, income and livelihood, and tax revenues. On top of human losses, there exists a long-lasting impact on the population's welfare (Hallegatter, 2014). Flooding may result from the failure of dams or other water-retaining infrastructure, which has recently been linked to climate change and global warming (Gonzalez-Uribe, 2018). Floods affected over 2.5 million people across Nigeria, killing over 600 people

and displacing over an estimated 1.5 million people and 750,000 hectares of cropland were flooded interfering with agriculture which is the linchpin of the state economy (Famine Early Warning System Network [FEWSN], 2023).

Agriculture is undoubtedly of central importance to the economy of Nigeria and in Anambra State as it is the cornerstone occupation of the rural people in Anambra Agricultural Zone, due to the zone's rich customary lands (www.anambrastate.gov.ng; Ojiagu, et al, 2022). The agricultural sector in the 2nd Quarter of 2023 generated about 21% of Nigeria's Gross Domestic Product (GDP) and the largest contribution was from crop production (Sasu, 2023). Nonetheless, the agricultural zone faces multiple adversities that significantly affect their resilience, livelihoods and overall well-being. Floods emerged as the most serious challenge, affecting the entire population of the zone and underscoring its profound impact on agriculture and welfare. Climate change is expected to increase the density and potency of heavy rain events and the risk of floods impacting agriculture (OECD, 2022). Resilience therefore becomes pivotal for the communities in the zone.

Resilience, bolsters long-term wellbeing, regardless of external hazards and risks. Resilience connotes a community's ability to recover from and adapt to external shocks while maintaining its structure and functionality (Matinucci et al, 2024). The value of resilience is the cost avoided by a community when an external shock is realised. Resilience is closely related to recovery. Resilience and recovery can reduce the consequences of an event on a community serving as a sequential process that evolves over time (Simmie& Martin, 2010). Consequently, economic resilience refers to a community's ability to foresee, adapt to, and leverage changing conditions to its advantage. Economic resiliency has three primary attributes: the ability to recover quickly from a shock; stand a shock and avoid the shock altogether. (United States Economic Development Administration [EDA], 2016). Strong agricultural Cooperatives could be a powerful pathway to protect vulnerable populations from flood disasters (Gustafson, 2024).

Agricultural Cooperative is an association of farmers who came together not for profit purposes, but to undertake joint efforts to promote the growth of their enterprise under improved conditions. Farmers often form agricultural cooperatives to promote and sustain their interests (Mumararungu, et al, 2024). As people-centred enterprises, agricultural cooperatives can contribute to the SDG, 17 goals, focused on ending poverty, protecting the planet, and ensuring prosperity for all. Thus, giving farmers better access to markets adding value and improving rural resilience, this moves agriculture to a level of "anti-fragility" for the next generation (ICA, 2018). Agricultural cooperatives can assist farmers access science-based information on adaptation to climate and weather-related risks, preparedness and response, establish networks and build relationships and capabilities before a disaster.

Statement of the Problem

Farmers in the study area (Anambra Agricultural Zone) heavily depend on agriculture for their livelihood, but flooding has become a major challenge. This is due to their environment and the nature of the soil. The area is regarded as the food market of Anambra State, but is currently challenged due to climate change and weather vagaries. Flooding in the area results in the damaging of the agricultural produce and loss of livestock, and other precious but valuable assets; non-accessibility of farmers/market roads is inevitably created; human loss, loss of income and livelihood, and the eventual negative impact on the residents' welfare. Flooding was and will continue to be a significant threat exacerbating food insecurity in the Agricultural zone and in particular the state. The challenge occasioned by flooding may have been abated if there existed early warning systems and good governance by the concerned agencies, which could have led to business base diversification and emergency supplies to victims, which bolsters resilience in the form of long-term well-being. Thus a lacuna is created in which agricultural cooperatives can fill the gap of resiliency and help members mitigate against flood disaster.

Objective of the Study

The main objective of the study is to investigate the effect of economic resilience on flood disaster mitigation among members of Agricultural Cooperatives in Anambra Agricultural Zone, Anambra State, Nigeria. The specific objectives are to:

A. determine the relationship between business base diversification and early warning systems to members of the cooperative in the agricultural zone.
B. assess the relationship between government good governance and emergency supply to members of the cooperative in the agricultural zone.

LITERATURE REVIEW AND THEORETICAL BACKGROUND

Economic Resilience

In a transmuting climate, the intensity and occurrence of natural disasters will likely increase. Flooding is the costliest among natural disasters which causes large economic damage (thus communities develop

the ability to leverage changing conditions to their advantage). The concept of resilience is often seen as the ability of a system to remain unchanged when being subjected to disturbances (Zevenvergen et al, 2020).

Economic resilience also refers to an inherent and adaptive response to disasters that enable individuals and communities to avoid some plausible possibilities. Economic resiliency has three primary attributes: the ability to recover quickly from a shock; the ability to withstand a shock; and the ability to avoid shock altogether (Thijset al, 2024; EDA 2016; Hallegatte, 2014).

Economic resilience with Agricultural cooperatives can be particularly robust due to several unique attributes of the cooperative in terms of inclusivity which enhances the adaptability to economic challenges since the cooperatives prioritize member needs over profit maximization. (Mumararungu, et al, 2024). Thus Agricultural Cooperatives can enhance a stable trajectory of healthy functioning after a highly adverse event.

Flood Disaster

Flood is the overflow of water, which submerges land that is usually dry. It takes place when lakes, ponds, river beds, soil and vegetation cannot absorb all the water, making excess water run off the land in volumes that cannot be carried within stream channels or retained in lakes, natural bonds or man-made reservoirs. Floods can happen in a multitude of ways: when rivers overflow their banks due to excessive rain, or a ruptured dam upstream and many more. Floods are among the most common natural disasters, gravely affecting the lives of humans and the environment from the beginning of time, which often cause damage to homes, businesses, and farmlands if they are located within the flood zones or flood plains (Nugraheni&Suyatna, 2020; Islam, et al, 2016). Flood disaster mitigation encompasses a range of strategies and actions designed to reduce the risk and effect of floods on communities, properties, and the environment. Effective flood mitigation sometimes involves both structural and non-structural measures, community engagement, policy development and technological innovation (Ijeomanta, 2023).

Business Base Diversification

Business diversification refers to the grand design expansion of individuals, communities or firms into new products, services, or markets to reduce risk, capture new opportunities and enhance overall business resilience. Diversification is undertaken when an organisation or proprietor aims at changing its business definition either by developing new products or expanding into a new market individually or jointly with another entity (Oladimeji&Udosen, 2019), with the goal to reduce the overall risk of the business and generate new source of revenue. Business diversification is an effective business strategy for building resilience, spreading risk, and maximizing opportunities. Diversification can safeguard businesses against economic downturns, industry shifts and other unforeseen challenges (Aliyeva, 2024). Agricultural cooperatives can diversify their business by maintaining an ecological production system (Adadu, et al, 2024).

Early Warning System

Early Warning System (EWS) is an integrated system of hazard monitoring, forecasting and prediction, disaster risk management, communication and preparedness of activities systems and processes that enables individuals, communities, government, businesses and others to take timely action to reduce disaster risk in advance of hazardous events (UN, Maldives, 2023). Early Warning System is crucial for mitigating catastrophic risks associated with flooding because an effective EWS can allow communities, groups, or individuals to take the required steps to reduce the influence of an impending hazard. This implies that one of the reasons for the devastating effects of flooding in cost communities may be associated with the lack of EWS. Early warning systems are highly significant to disaster risk reduction (Otuogha, 2024). The EWS is a social process aimed at mitigating the impact of disaster and preventing harm. The EWS involves sets of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities, organisations and farmers threatened by a hazard to prepare and act appropriately and insufficient time to reduce the possibility of harm and loss (United Nations International Strategy for Disaster Reduction [UNISDR], 2012). Agricultural cooperatives can be prompt in early action by engaging in advocacy with policymakers. There are four elements of EWS consisting of understanding of risks and factors that drive the risk; continuous monitoring of the parameters and precursors that enable administrators to anticipate hazards and to generate timely and accurate information; ability to communicate and disseminate highly useful, practical information that enables affected parties to respond purposefully and the formation of a disaster management plan (Btaimah, et al, 2019).

Good Governance

Governance relates to the manner in which the vested authority uses its power to achieve the institution's

objectives, including its powers to design, implement and innovate the organisation's policies, rules, systems and processes, and to engage and involve its stakeholders. Therefore, good governance implies that the exercise of the vested authority is accountable, participative and dynamic International Social Security Association (ISSA, 2024). Good governance aims to minimize corruption, take into account the opinions of minorities, listen to the voices of the oppressed people in the decision-making process, and respond actively to the needs of the community now and in the future United Cities and Local Government, Asiaa Pacific (UCLG, ASPAC], 2021; Emeh, et al, 2019). Generally, good governance connotes that processes and institutions produce results that meet the needs of society while making the best use of resources at their disposal. Nevertheless, good governance has eight major characteristics. It is participatory, consensus-oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of law (Keping, 2018).

Emergency Supply

Being prepared means being equipped with the proper supplies in the event of an emergency or disaster. This involves keeping supplies in an easy-to-carry emergency preparedness kit that can be used in case of evacuation (The American National Red Cross (TANRC, 2024). Emergency for a long time has been an integral part of existence as well as the greatest concern to humanity, irrespective of the level of civilization. Emergency occurrence in addition to its management determines human existence along with extinction from the surface of the earth. Emergency means a sudden crisis requiring action (Ovosi, 2008). Emergency supply is an action that is arranged quickly and not in a normal way through the supplies of food, equipment, and other essential things that people need in large quantities because an emergency has occurred (Collins, Dictionary).

Business Base Diversification and Early Warning Systems

Business base diversification [BBD] and early warning system [EWS] relationship seems to differ across countries. Business diversification has remained an important strategy for many firms (large, medium and small) worldwide. It should not be considered a trend rather it is based on increased productivity, reduction of risk (more of natural disaster risks), increased market share, increased debt capacity, high growth, extension of business life guide, and efficient utilization of human and financial resources (Yignit&Behram, 2013). The outcome of business base diversification will vary across areas because of the influence of the environment followed by early warning systems to reduce disaster risk in advance due to hazardous events (UN, Maldives, 2023). Society is adversely affected due to different economic crises, financial crises, natural disaster crises and many more. There is a need to develop an early warning system that helps in preventing economic as well as business crises. Crises can be detected by the early warning system before the damage and rescue the probability of event occurrence (Kumar, 2022). The challenge of BBD can be solved by the development of EWS. Early warning system acts as the most important element in the organisation to prevent negative occurrences in businesses more in natural disaster-prone areas. (Klopotan, Zoroja&Mesko, 2018). A warning system has been used for earthquakes, floods, tornados, tsunamis, and landforms (Lin, 2021).

Good Governance and Emergency Supply

Good governance creates a conducive environment for effective disaster risk reduction through political commitment and strong institutions as a framework for the success of effective and sustained disaster risk reduction (UN/ISDR Africa Educational Series [UN/ISDRAES], 2024). Good governance is expected to elevate disaster risk reduction into a policy priority, allocate the necessary resources to it, ensure and enforce its implementation assign accountability for failures, as well facilitate participation by all relevant stakeholders (Bricerno, 2004). Emergency supplies are measures taken to avert a disaster through the mobilization of personnel, funds, equipment and supplies with a safe environment for effective relief (Sena, Kifle&Jimma, 2006). No doubt good governance prepares emergency managers to think of disasters as recurring events and work towards the four phases of emergency management which are: mitigation, preparedness, response and recovery (Ardiansyah, et al, 2024).

Theoretical Framework

This paper is anchored on Resiliency Theory by Norman Garmezy in 1991. Resilience theory argues that it's not the nature of adversity that is most important, but how adversity is dealt with. When there is adversity, misfortune, or frustration, resilience helps the affected to bounce back. It ensures survival, and recovery, and even thrives in the face and wake of misfortune. The basic assumption of the theory is that resilience aids people in overcoming hardships. It aids in people's abilities to flourish and overcome obstacles after adversity. The tenets of the theory reveal that the process of coping with adversity, or change lies in the identification, fortification, and enrichment of resilient factors. It

enlightens further that resilient people are more capable of adversity in a productive way. The theory therefore teaches that Agricultural cooperatives can fixate the members to a more positive viewpoint and enable them to create new goals that will benefit their situation despite the adversity.

Empirical Review

Prior studies on a similar title of the effect of Economic Resilience on Flood Disaster Mitigation among Members of Agricultural Cooperatives in Anambra Agricultural Zone, Anambra State, Nigeria among scholars presented varied perspectives and findings. Such extant works include:

Mumararungu, et al (2024) investigated Agricultural Cooperatives and Members' Resilience in Kita and Yanfolilacircles of Mali using qualitative (FGDs) and qualitative (questionnaire) methods. The findings from the study indicated that agricultural cooperatives bolstered members' resilience and fostered social cohesion by facilitating knowledge sharing. This is through the proactive approach of the cooperative by equipping members with the necessary tools and offering members with the best practice ideas in times of adversity. This study is apt in its discourse considering the regions and involvement of non-members in the study. This differs from the current paper which introduced the variable of early warning system (ENS) which is a groundbreaking effort by the United Nations to ensure everyone on earth is protected from any form of disaster.

In a related study, Odiana et al (2023) studied flood disaster preparedness and Capacity Assessment among Crop Farmers in Edo State, Nigeria. The researchers adopted the multistage sampling technique to arrive at a sample size of 400 participants. The questionnaire was the primary source of data. Descriptive statistics were used to analyze the data. The study reveals that the study participants were aware of flooding but had a poor coping capacity. This study brings to the fore the poor coping capacity and lack of preparedness of the farmers in the study area which is an indication of lack of good governance. The variable of good governance is infused in the current study as a vital variable to flood mitigation.

Idoko (2016) assessed; An Impact Assessment of Flooding on Food Security Among Rural Farmers in the Dagiri community of Gwagwalada Area Council, Abuja, Nigeria. Using both qualitative and quantitative analysis, the study found that there were no community flood risk management initiatives of flood in the community. The study is relevant as showed community and government weaknesses in flood control and management. This displays a lack of emergency supply and what is more, flooding as a recurring dilemma in the area and then a necessity to introduce business base diversification, which the current study intends to handle.

Existing literature continues to attract environmental, health and management sciences. This interest is not surprising since flood and flooding have been devastating natural disasters. Although the overall understanding of how Agricultural cooperatives manifest itself in disaster mitigation and management is still growing. Several conceptual, theoretical and methodological challenges remain, and little developed about how cooperatives offer advantages to members in times of flooding with its social nature in relation to the dimension of disaster mitigation. Hence, this paper contributes to addressing the knowledge gap on the dimensions of economic resilience and flood disaster mitigation.

METHODOLOGY

Descriptive survey research design was adopted by the study. It was used to obtain relevant information from the selected respondents to determine the nature of relationships existing among the variables under investigation. The study was carried out in Anambra Agricultural Zone, Anambra State, Nigeria. The population of the study comprises all the active and registered of Agricultural Cooperative in the Anambra Agricultural Zone. Proportionately, the four agricultural zones in Anambra state were allocated equally with the total number of Agricultural Cooperatives and the estimated membership in the state which are 2862 and 50867 respectively (Anambra State Cooperative Department, 2024) to yield outcomes per zone. This resulted in a population of 716 and 12717 respectively. Application of the multistage technique shows that in the first stage, the study area (Anambra Agricultural Zone) was selected out of the zones due to its prolonged consistent history of adversity flood-affected zones. In the second stage, 8 "high-risk" communities were selected from two out of the three local governments of the zone. This was informed by their topography which includes riverbanks, swamps, and fertile plains. The third stage involves the equal proportionate of the zonal figure for agricultural cooperatives and the estimated membership across the three LGAs in the study zone to determine statistically the sample size through Slovin's formula on the case of the LGAs (Anambra East and Anambra West) only. This yielded n = 382 as the sample size for the study. The questionnaire was employed to access the primary data. The research instrument was validated through face and content validity while the internal consistency of the research instrument was checked

through the Cronbach Alpha technique. Descriptive statistics and the Pearson product Moment Correlation Coefficient (PPMCC) tools were used for data analysis to determine the extent of the relationship among variables of the study.

Data Presentation and Analysis

The data collected for the study is presented and analyzed in this section of the work. A total of 382 copies of questionnaire was distributed to the studied cooperative and their members, in the end, 360 was collected, out of the copies collected, 6 were not used because some of them were not answered completely and others were mutilated. SO, the study analyzed 354 copies of questionnaire, representing 93% of the entire copies of the questionnaire distributed (sample size).

Table 1: Demographic Factors of the Respondents

No	Biographic	Frequency	Percentage	Total
1	**Gender**			
	Male	120		**354**
	Female	134		
2	**Age**			
	20-30	20		**354**
	31-40	90		
	41-50	225		
	51-60	19		
4	**Educational Qualifications**			
	Primary school	24		
	SSCE	36		**354**
	NECO/OND	105		
	HND/B.Sc	125		
	MBA/ M.Sc	48		
	PhD	16		
5	**Years of Cooperative Experience**			
	1 – 10 years	149		**354**
	11 – 20 years	121		
	21 – 30 years	80		
	31 – 40 years	4		
5	**Occupation**			
	Farmer	109		**354**
	Trader	129		
	Artisan	8		
	Civil Servant	98		

Source: Field Survey, 2026

Table 1 reveals the demographic factors of the respondents in the study. The Tables show that out of the 354 respondents, 120 are male while 134 are female. 20 of the respondents are between the ages of 20-30, 90 are between 31-40, 225 are between 41-50 and 19 are between 51-60. The Table also indicates that 24 of the 354 respondents have primary school education, 36 have SSCE qualification, 105 have NECO/OND, 125 have HND/B.Sc, 48 have MBA/ M.Sc while 16 are educated up to PhD level. As for the years of cooperative experience, 149 of the 354 members have 1 – 10 years of cooperative experience, 121 have between 11 – 20 years of cooperative experience, 80 have between 21 – 30 years of cooperative experience and 4 have between cooperative experience 31 – 40 years. The figures in the occupation of the members show that 109 of them are farmers, 129 are traders, 8 are artisans and 98 are civil servants.

Analysis of Research Questions

1. What is the relationship between business base diversification and early warning systems to members of the cooperative in the agricultural zone?

Table 2: Distribution of responses for business base diversification and early warning systems

S/N	ITEMS	SA	A	UN	D	SD	Mean
	Business Base Diversification						
1	In our cooperative, we are advised not to depend on farming alone, but to also change to other trades for survival in the season of floods.	198	135	5	10	6	4.44
2	The intermixture of crop planting has helped members in times of flood.	200	139	2	5	8	4.46
3	New businesses are captured by the members of our cooperative due to expansion from farming,	156	171	4	12	11	4.27
4	Business risk spreading has helped members earn more money.	100	233	1	8	12	4.13
5	Members change to other new businesses due to warning from flood disaster at hand	180	153	-	3	18	4.34
	Early Warning System						
6	Members of our cooperative are well cautioned to take timely actions in advance of flooding event	280	55	3	7	9	4.67
7	We are prewarned on times of flooding and what causes flood, by the government so as to take action on our lives and businesses.	260	85	1	2	6	4.67
8	We are not aware of any early warning system existing in the cooperatives as we are not helped to prepare for flood shocks.	12	36	-	189	117	1.97
9	Our cooperative executives have management plans for members before the flood to event reduce harm.	116	220	4	4	10	4.21
10	We take preventive actions in our cooperatives to reduce damage and loss of life during floods	199	143	2	7	3	4.49

Source: Field Survey, 2026

Table 2 shows the distribution of responses for business base diversification and early warning systems. This Table aims to answer the research question which asks "what is the relationship between business base diversification and early warning systems to members of the cooperative in the agricultural zone". The analysis is done using mean, with a threshold of acceptance of 3, meaning any questionnaire items that have a mean of 3 and above should be accepted while any that is below 3 should be rejected. Accepted mean indicates that what the question asked is being done in the cooperative or applicable to their cooperative while rejection signifies not applicable to their cooperative. From the Table, it is seen that all the questionnaire items have means that are greater than 3 and hence, accepted, except for questionnaire item 8 whose mean is 1.97, and therefore, rejected.

2. What is the relationship between government good governance and emergency supply to members of the cooperative in the agricultural zone?

Table 3: Distribution of responses for government good governance and emergency supply

S/N	ITEMS	SA	A	UN	D	SD	Mean
	Government Good Governance						
1	Members of the cooperative always take part in the decision making with the government agencies on their present and future needs as regards to hazards.	200	120	7	11	16	4.35
2	Decisions taken and their carrying out are done in a way that follow rules and regulations in our cooperative.	289	55	-	6	4	4.75
3	Our cooperative serves all the members during emergencies.	169	159	4	12	10	4.31
4	Members are given a chance to improve their well-being in our cooperative.	200	132	1	7	14	4.40
5	The needs of our members are met due to good usage of the cooperative resources.	130	201	-	13	10	4.21
	Emergency Supply						
6	Due to yearly flood disasters, our cooperatives do have prepared assistance plans.	190	153	3	5	3	4.47
7	Our cooperatives are ready for members' relief due to flood disasters with the supply list of useful items	221	118	3	3	9	4.52

8	Members' farms are worked around to identify weaknesses to flooding.	100	247	1	-	6	4.23
9	Damaged structures are rebuilt by our cooperative due to previous experience of disaster.	89	251	5	5	4	4.18
10	During flood disasters, preparedness, response andrecovery abilities of the cooperative do not go smoothly.	270	62	5	6	11	4.62

Source: Field Survey, 2026

Table 3 reveals the distribution of responses for government good governance and emergency supply. The Table aims to answer research question two which asks "what is the relationship between government good governance and emergency supply to members of the cooperative in the agricultural zone". The mean is used for the analysis here, with a benchmark of acceptance of 3, meaning any questionnaire item that has a mean of 3 and above should be accepted as being true for them in their cooperative while any that is below 3 should be rejected. Looking at the mean statistics of the individual questionnaire items in the Table, it indicates that all the questionnaire items are accepted as being applicable to them in their cooperative because they all have a mean that is greater than 3 which is the benchmark of acceptance.

Test of Hypothesis

1. Ho_1: There is no significant relationship between business base diversification and early warning systems to members of the cooperative in the agricultural zone.

Table 4: Correlations Analysis for Hypothesis One

		BBD	EWS
BBD	Pearson Correlation	1	.933**
	Sig. (2-tailed)		.000
	N	354	354
EWS	Pearson Correlation	.933**	1
	Sig. (2-tailed)	.000	
	N	354	354
**. Correlation is significant at the 0.01 level (2-tailed).			

Source: Field Survey, 2026

BBD = Business Base Diversification
EWS = Early Warning Systems

Table 4 shows the correlation analysis for hypothesis one which states that there is no significant relationship between business base diversification and early warning systems to members of the cooperative in the agricultural zone. With the adoption of a 5% level of significance, meaning that if the probability value as represented by Sig on the Table is less than 0.05, the alternate hypothesis should be accepted, going by what is obtained on the Table, the alternate hypothesis is accepted and it is stated that there is a statistically significant positive relationship between business base diversification and early warning systems to members of the cooperative in the agricultural zone ($r = .933$ p-value $< .05$).

2. Ho_2: There is no significant relationship between government good governance and emergency supply to members of the cooperative in the agricultural zone.

Table 5: Correlations Analysis for Hypothesis Two

		GGG	ES
GGG	Pearson Correlation	1	.938**
	Sig. (2-tailed)		.000
	N	354	354
ES	Pearson Correlation	.938**	1
	Sig. (2-tailed)	.000	
	N	354	354
**. Correlation is significant at the 0.01 level (2-tailed).			

Source: Field Survey, 2026

GGG = Government Good Governance
ES = emergency supply

Table 5 reveals the result of the correlations analysis for hypothesis one which states that there is no significant relationship between government good governance and emergency supply to members of the cooperative in the agricultural zone. From the Table, it is seen that the correlation coefficient (r) is .938 and the p-value is .000. Going by this, therefore, the alternate hypothesis is accepted and is stated that there is a statistically significant positive relationship between government good governance and emergency supply to members of the cooperative in the agricultural zone.

Discussion of Findings

The results of this study give members of agricultural cooperatives in the Anambra Agricultural Zone important new perspectives on the link between economic resilience methods and flood disaster mitigation. Examining two important areas of catastrophe preparedness and resilience: government good governance and emergency supplies; business base diversification and early warning systems.

Business Base Diversification and Early Warning Systems

The correlation analysis ($r = .933$, p-value $< .05$) establishes a strong and statistically significant positive relationship between business base diversification and early warning systems for cooperative members. This result suggests that agricultural cooperatives that encourage members to diversify their income sources are also more likely to provide access to effective early warning systems. Diversification reduces financial vulnerability, allowing cooperative members to invest in flood mitigation measures, while early warning systems enable them to take proactive steps before a disaster occurs.

These findings align with previous studies such as Mumararungu et al. (2024), who emphasized the role of agricultural cooperatives in equipping members with knowledge and resources to build resilience. However, unlike that study, the present research integrates early warning systems, which is a groundbreaking initiative promoted by the United Nations Early Warnings for All (EW4All) campaign to ensure global disaster preparedness. The strong correlation between these two variables underscores that economic resilience when supported by cooperative-led business diversification, enhances the capacity of members to respond effectively to flood risks.

Government Good Governance and Emergency Supply

Similarly, the correlation result ($r = .938$, p-value = .000) indicates a statistically significant positive relationship between government good governance and emergency supply for cooperative members. This finding suggests that when governance structures are effective-characterized by transparency, accountability, and proactive disaster management policies-cooperatives and their members benefit from more reliable emergency supplies during flood events. Good governance ensures the availability and equitable distribution of relief materials, financial aid, and infrastructural support, thereby reducing post-disaster vulnerabilities. This aligns with the study by Odiana et al. (2023), which revealed that farmers in Edo State had poor coping capacity due to inadequate governance structures. Unlike that study, however, the present research explicitly integrates good governance as a determinant of emergency supply efficiency, highlighting its role in strengthening flood disaster mitigation efforts. Additionally, the findings resonate with Idoko (2016), who pointed out the absence of community flood risk management initiatives in Abuja, leading to frequent flooding and food insecurity.

Conclusion

Focussing on business base diversification, early warning systems, good governance, and emergency supply, this study investigated the relationship between economic resilience and flood disaster mitigation among members of agricultural cooperatives in the Anambra Agricultural Zone. The results showed a clear positive correlation between early warning systems and business diversification, therefore underscoring the need for economic stability in improving proactive disaster readiness. By helping members develop financial resilience, agricultural cooperatives that support diversification help to enable the acceptance of efficient early warning systems. This emphasises how cooperatives help members acquire vital knowledge and instruments to properly handle flood hazards. Moreover, the study revealed a notable positive correlation between good governance and emergency supplies, thereby stressing the important function of government policies and institutional assistance in flood disaster management. Good government guarantees that cooperative members have enough emergency supplies, therefore, lessening the effect of flooding. This result fits earlier research highlighting flaws in catastrophe response and preparedness under government. Still, the current study incorporates governance as a major factor as open, responsible leadership improves attempts at disaster prevention.

Recommendation

1. Agricultural cooperatives should actively promote business-based diversification to enhance

members' financial resilience against flood disasters. This can be achieved by encouraging members to engage in alternative income-generating activities, such as agribusiness, agro-processing, and climate-smart farming techniques, which reduce dependency on flood-prone agricultural activities. Additionally, cooperatives should integrate early warning systems by collaborating with meteorological agencies and disaster management organizations. Implementing mobile alerts, community-based flood warning mechanisms and training programs will ensure that cooperative members receive timely information to prepare for and mitigate flood risks.

2. The government should establish transparent, accountable, and community-inclusive policies that prioritize flood disaster management for cooperative members. This includes strengthening disaster preparedness programs, ensuring equitable distribution of emergency supplies, and improving post-disaster recovery strategies. Cooperatives should work closely with government agencies to develop structured emergency response plans, which include reserve funds for disaster relief, access to financial aid, and pre-positioned emergency supplies.

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