Resilience Capacity Assessment of Communities in Akwa Ibom State, Nigeria

Abstract

The study assessed the resilience capacity of communities in Akwa Ibom State, Nigeria. The resilience capacity was accessed based on the absorptive, adaptive and transformative capacity of the communities using Resilience Capacity Assessment Questionnaire (RCAQ). RCAQ was administered to four hundred (400) respondents and data were analysed using descriptive statistics. The findings revealed that communities were found to be within low (138), moderate (429) and high (228) vulnerability levels. The absorptive strength of the communities revealed that they have access to their saving during shock event such as flood (51.8%, Mean = 3.48, SD= 1.17) while the identified challenge was the lack of insurance coverage for various socio-economics activities in the aftermath of hazard event (51.5%, Mean = 2.90, SD= 1.33). Communities showed strength in the adaptive capacity such as diversified means of livelihood within their community (57.7%, Mean = 3.15, SD= 1.09); however, they lack early warning and natural resources management training (47.9%, Mean = 1.95, SD= 1.07). The communities showed strength in transformative attribute such as market availability for household to sell and buy agricultural product (68.5%, Mean = 3.23 SD= 1.17) but lack access to formal safety net in the community (53.6%, Mean = 2.09 SD= 1.04). The outcome revealed that resilience capacity building was hindered by poor social amenities (25.6%) and communities should be in control of their resources (25.6%) to improve resilience capacity. Conclusively, communities' resilience capacity building process was lacking from the absorptive and transformative capacities perspective; hence, there is need for government-community engagement as a means to develop community resilience capacity.

Keywords: Resilience Capacity Assessment, Absorptive Capacity, Adaptive Capacity, Transformative Capacity, Akwa Ibom

Introduction

Between the years 2011–2020, Nigeria recorded about 1,187 deaths connected to flooding, 15% of Africa's deaths by flooding within the same period. The cost of damage to properties was $904.5 million, which comprised 21% of property damage in Africa from flooding (Umar & Gray, 2022). As well as in 2012 and 2018, flood damage and impact were also high in 2011 and 2020 (Umar & Gray, 2022). Recovery from a disaster can be hindered by inadequate community resilience capacity, impoverishment, and destitute facilities (Barker, 2011; Alshehri *et al.*, 2013). Therefore, crucial attention is presently given to acquiring the mental ability of disaster-impacted

communities to recuperate from the consequence of the event in the presence or absence of foreign support (Alshehri *et al.,* 2013).

Resilience is captured by a set of capacities that enable households and communities to effectively function in the face of shocks and stresses and still meet a set of well-being outcomes (TANGO International, 2018). The ability to measure resilience involves measuring the relationship between shocks, capacities, responses, and current and future states of well-being. Thus, there is no single indicator that measures resilience. There is a need for a number of indicators to be analytically used as part of a measurement framework (Kafle, 2011). The disaster-resilient community is the safest possible community that we have the knowledge to design and build in a natural hazard context. It seeks to minimise its vulnerability to such hazards by maximising the community capacities through the application of disaster risk reduction (DRR) measures (Kafle, 2011).

Community resilience involves the capability of community members to intentionally take deliberate, goal-oriented, and cooperative actions to assuage from destructive impacts of unwanted events such as disasters (Afolabi et al., 2023). Similarly to personal resilience, community resilience entails the desire, attitude, beliefs, mindset, hope, and resources (Pfefferbaum *et al.,* 2013). Community resilience depicts the corporative capacity of a group or an area to come together to handle their adversity and recover from it without necessarily affecting their way of life in the aftermath of the adversity (Aldrich, 2012, Aldrich & Meyer, 2014).

Resilience capacities represent the *potential* for proactive measures to be taken in order to deal with shocks or stresses (Vaughan, 2018). In a resilience theory of change, capacities can be represented at the output level. Capacities can be developed, supported or strengthened by

program activities, and then contribute to effective responses to shocks and stresses (Vaughan, 2018). Many practitioners find it useful to organize capacities into three groupings that reflect different dimensions of resilience; *Absorptive Resilience Capacities:* The ability to minimize exposure and sensitivity to shocks and stresses through preventative measures and appropriate coping strategies to avoid permanent, negative impacts (Vaughan, 2018). *Adaptive Resilience Capacities:* The ability to make informed choices and changes in livelihood and other strategies in response to longer-term social, economic and environmental change (Vaughan, 2018). *Transformative Resilience Capacities*: The governance mechanisms, policies and regulations, cultural and gender norms, community networks, and formal and informal social protection mechanisms that constitute the enabling environment for systemic change (Vaughan, 2018).

Method and Materials

Research Design

A cross-sectional survey research design was adopted for the study.

Study Area

The study area was Akwa Ibom State of Nigeria. Akwa Ibom State is one of the thirty-six states in Nigeria and is located at latitude 4° 33' N and 5° 33' N and longitude 7° 25' E and 8° 25' E (Figure 1). It occupies a total land area of 7,246 square kilometres, with a population of 3,920,208 million people (NPC, 2006). Akwa Ibom State is generally a low-lying plain and riverine area with no portion exceeding 175m above sea level. The state is bounded to Atlantic Ocean at the southern end entering into some of its LGAs and communities. The climate features within a tropical monsoon climate of transitional zone of Koppen Af climatic types that varies from the hot equatorial forest type in the southern lowlands to the humid tropics in the northern

highlands and the cool montane type in the Obudu plateau area with prolonged and heavy rainy season and very short dry season months in the region.

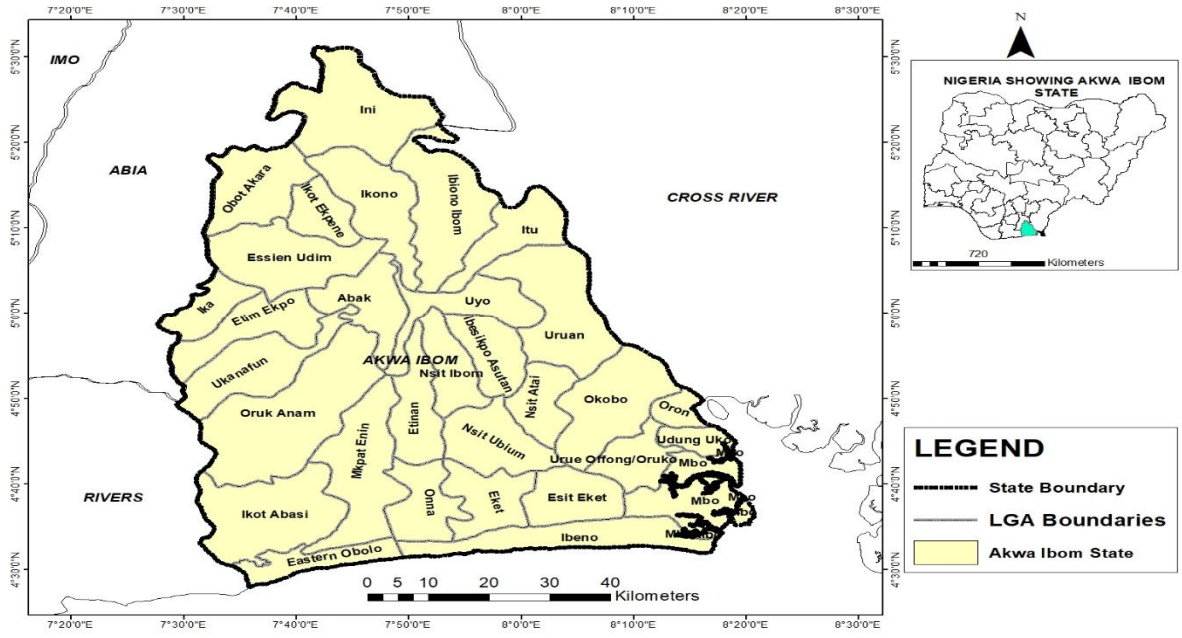

Figure 1: Overview of Akwa Ibom State showing various LGAs

Sample Size

Based on the eligibility criteria, purposive sampling techniques was adopted in selecting the communities for the study. Considering various attributes of inclusion of the population, the selected LGAs and their communities for the study are presented in the Table 1.

From Table 1, the National Population Commission data of 2006 for each of the LGAs was used as the base year and projected to 2021 using an annual growth rate of 3.2%. In order to project the current population of the study areas, the Malthus Exponential Model was adopted.

The formula for the Malthus Exponential Model is given thus:

$$P_t = P_o e^{r*t} \qquad (3.1)$$

Where P_t = Population to be projected, P_o = population of the base year; t = time, r = rate of increase (natural increase divided by 100) and e= exponential factor and constant at 2.718

Table 1: Projected Population of the Study

LGAs of Study	Selected Communities	2006 Population (NPC)	Projected Population (2021)
Ikot Abasi	Ikot Akan Atan Ikpe Ikot Apkan	132,608	214,825
Eket	Edenbuk Ede Urua Osiok	172,856	280,027
Esit Eket	Urua Okok Ntak Iyang Etebi	63,358	102,640
Mbo	Ibuot Utan Ibaka Offi (Uda)	102,173	165,520
Onna	Mkpok Ikot Akpan Isiet	123,193	199,573
Total	**15**		**962,585**

Source: National Population Commission (2006),

To get an optimum sample of the target population, the Taro Yamane (1967) formula for sample size determination was adopted;

$$n = \frac{N}{1+N(e)^2} \qquad (3.2)$$

Where: e= Level of precision (0.05)

N= Population

n= Sample size

1= Constant

Using proportionate sampling techniques, the distribution of the sample size was based on the percentage of each of the LGAs of study in the projected population which also determines the amount of questionnaire that was distributed among the LGAs (Table 2).

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

$$n = \frac{962585}{1 + 962585(0.05)^2}$$

$$n = \frac{962585}{1 + 962585 * 0.0025}$$

$$n = \frac{962585}{1 + 2406.46}$$

$$n = \frac{962585}{2407.46}$$

$$n = 399.9 \sim 400$$

$$n = 400$$

From the selected LGAs (5) for the study, three (3) communities was selected each LGAs making a total of fifteen (15) communities that was involved in the resilience capacity aspect of the study. A total of 400 copies of questionnaire were administered to the inhabitants (respondents) in the selected communities; however, 371 were properly filled and further analysed for the study.

Resilience Capacity Assessment Questionnaire (RCAQ)

RCAQ was used to elicit information from respondents. The RCAQ adopted for the study will make use of Likert 5points scale of closed-ended format and was divided into sections:

i. *Section A:* the section captured the demographic details of the respondents (shop owners/space occupants) so as to be able to describe respondents in terms of gender, age, rank, state origin, income, ethnicity and religion.

ii. *Section B:* the question in section provided answers to the research questions that include adaptive and absorptive resilience capacities among communities in the study area. The transformative resilience capacities among and the factors influence or hindering resilience capacity building among LGAs in the study area.

Table 2: Sample Size and Distribution of Questionnaire

LGAs of Study	Selected Communities	2006 Population (NPC)	Projected Population (2021)	Taro Yamane Sample Size	Percentage in Projected Population	Questionnaire Proportion (Target Population)
Ikot Abasi	Ikot Akan Atan Ikpe Ikot Apkan	132,608	214,825	400	22	88
Eket	Edenbuk Ede Urua Osiok	172,856	280,027		29	116
Esit Eket	Urua Okok Ntak Iyang Etebi	63,358	102,640		11	44
Mbo	Ibuot Utan Ibaka Offi (Uda)	102,173	165,520		17	68
Onna	Mkpok Ikot Akpan Isiet	123,193	199,573		21	84
Total	**15**		**962,585**			**400**

Source: National Population Commission (2006), Researcher's field work, 2022

Method of Data Analysis

The retrieved questionnaire was coded and subjected to Statistical Package for the Social Sciences (SPSS) for proper analysis. The retrieved questionnaire coding was done with MS Excel before being transferred to the Data entry of SPSS. The data of the study was analyzed through descriptive and inferential statistics. Using the SPSS window (Version 22), the descriptive statistics tool such as frequency counts, percentages of response and chats was adopted for the analysis. The use of such statistics allows the researcher to present the evidence of the study in a way that can be understandable and makes conclusion concerning the variables of study. According to Baridam (2001) the use of descriptive statistics as statistical techniques helps to summarize our data and be able to describe such data, while Obasi (1999) asserted that such statistical technique gives researchers the ability to understand the characteristics, similarities, variation, and trends etc. of the variables studied.

Result and Discussion

Demographic Details of the Respondents

The socio-demographic details of those involved in the investigation deduced that 52.3% of the respondents involved in the investigation were male within the age group of 30-40years (39.9%), 43.1% are married, 40.1% possessed primary level education while 29.6% of the respondents are farmers.

Absorptive Capacity Assessment of Communities

Among the 10 items selected in exploring the absorptive capacity index of the communities (Table 3), the strength of the community was deduced from their capacity of household having access to their saving during shock event such as flooding (51.8%, Mean = 3.48, SD= 1.17); however, the communities are challenged by capacity of household having access to insurance to cover for their crops, livestock, health and any other type of insurance after shock event (51.5%, Mean = 2.90, SD= 1.33). According to Afolabi et al (2023), the purpose of resilience capacity assessment is to identify the community's strength and challenges in

the face of disturbance or unwanted events. Overall, the studied communities showed limited capacity towards absorptive assessment considering the total mean value of the items tested.

Adaptive Capacity Assessment of Community

Among the 10 items selected in exploring the adaptive capacity index of the communities (Table 4), the strength of the community was deduced from their capacity of households engage in more than one means of livelihood and all are WITHIN the community (57.7%, Mean = 3.15, SD= 1.09); however, the communities are challenged by capacity of households been provided with early warning and natural resources management training (47.9%, Mean = 1.95, SD= 1.07). Overall, the studied communities showed great capacity towards adaptive assessment considering the total mean value of the items tested. The outcome showed similarity with the of Ranjan and Abenayke (2014) which indicated that adaptive capacity building must consider communities attributes in their process.

Transformative Capacity among Communities

Among the 5 items selected in exploring the transformative capacity index of the communities (Table 5), the strength of the community was deduced from the availability of market for household to sell and buy agricultural products (68.5%, Mean = 3.23 SD= 1.17) but the community is challenged by the inadequate access to formal safety net among households (e.g. food assistance, shelter and government/NGO assistant) in the community (53.6%, Mean = 2.09 SD= 1.04). Overall, the studied communities showed limited capacity towards transformative assessment considering the total mean value of the items tested.

Conclusion and Recommendation

Understanding community's perception and factors which made them being resilient to disasters will open up ventures to improve resilience building process and to make community able to cope with disasters and consequent adverse circumstances. From the outcome, it was concluded that the community's resilience capacity building process was

lacking from the absorptive and transformative capacities perspective. Resilience building process should embrace available community resources and create a sense of belonging among the communities as a means to improve embracement of the resilience process.

Table 3: Absorptive Capacity Assessment of Communities

S/N	*Absorptive Capacity Index*	Undecided (%)	Disagreed (%)	Agreed (%)	Total	Mean	SD
1	Household have access to informal safety net (e.g. Religious and saving group) in the community.	105 (28.3%)	81 (21.9%)	185 (49.8%)	371 (100%)	3.37	1.23
2	Household is able to get help from various categories of people living within their community	72 (19.4%)	108 (29.1%)	191 (51.5%)	371 (100%)	3.45	1.25
3	Household is able to give help to people living WITHIN their community	120 (32.3%)	75 (20.3%)	176 (47.5%)	371 (100%)	3.43	1.11
4	[a] Household have access to their saving during shock event such as flooding	115 (31.0%)	64 (17.2%)	192 (51.8%)	371 (100%)	3.48	1.17
5	Our community understand disaster preparedness practices and are involve in it	117 (31.5%)	123 (33.2%)	131 (35.3%)	371 (100%)	2.95	1.33
6	There is a government and/or NGO disaster planning and/or response program in the village	138 (37.2%)	159 (42.8%)	74 (20.0%)	371 (100%)	1.97	1.07
7	Household receive emergency food or cash assistance from the government or NGO during shock event such as flooding	136 (36.7%)	151 (40.7)	84 (22.7%)	371 (100%)	1.91	1.01
8	Household participate in flood diversion structure (e.g. protection of land/infrastructure from flooding)	71 (19.1%)	170 (45.8%)	130 (35.0%)	371 (100%)	2.51	1.09
9	Household engage in ways of protecting their household from the impact of future shocks	107 (28.8%)	78 (21.0%)	186 (50.1%)	371 (100%)	3.35	1.21
10	[b] Household have access to insurance to cover for their crops, livestock, health and any other type of insurance after shock event.	126 (34.0%)	191 (51.5%)	54 (14.6%)	371 (100%)	2.90	1.33
						2.93	**0.61**

Key: A- Agreed (Strongly Agreed + Agreed), D-Disagreed (Strongly Disagreed + Disagreed), SD= Standard Deviation

[a] Absorptive Capacity Strength

[b] Absortive Capacity Challenge

Table 4: *Adaptive Capacity Assessment of Community*

S/N	*Adaptive Capacity Index*	Undecided (%)	Disagreed (%)	Agreed (%)	Total	Mean	SD
1	Households show aspirations, confidence to adapt, and a sense of control over one's life.	139 (37.5%)	46 (12.4%)	186 (50.1%)	371 (100%)	3.27	1.08
2	Household is able to GET help from various categories of people living OUTSIDE their community	73 (19.7%)	135 (36.4%)	163 (43.9%)	371 (100%)	3.29	1.17
3	Household is able to GIVE help to people living OUTSIDE their community	63 (17.0%)	134 (36.1%)	174 (46.9%)	371 (100%)	3.36	1.04
4	Household network with other household to achieve various services needed in the community	69 (18.6%)	122 (32.9%)	180 (55.8%)	371 (100%)	3.38	1.14
5	Adults in the household are educated and engaged in various form socioeconomic activities	123 (33.2%)	120 (32.3%)	128 (34.5%)	371 (100%)	2.94	1.32
6	[b] Households are provided with early warning and natural resources management training	74 (20.0%)	178 (47.9%)	119 (32.1%)	371 (100%)	1.95	1.07
7	Households in the community have access to necessary information and easily adopt improved practices	87 (23.5%)	128 (34.5%)	156 (42.0%)	371 (100%)	3.24	1.17
8	[a] Households engage in more than one means of livelihood and all are WITHIN the community	33 (8.9%)	124 (33.4%)	214 (57.7%)	371 (100%)	3.15	1.09
9	Households engage in more than one means of livelihood and all are OUTSIDE the community	69 (18.6%)	122 (32.9%)	180 (48.5%)	371 (100%)	3.37	1.16
10	Community/Household have institution that provides credit or saving support	116 (31.3%)	127 (34.2%)	128 (34.6%)	371 (100%)	2.91	1.30
						3.09	**0.43**

Key: A- Agreed (Strongly Agreed + Agreed), D-Disagreed (Strongly Disagreed + Disagreed), SD= Standard Deviation
[a] Absorptive Capacity Strength
[b] Absorptive Capacity Challenge

Table 5: *Transformative Capacity Assessment of Community*

S/N	*Transformative Capacity Index*	Undecided (%)	Disagreed (%)	Agreed (%)	Total	Mean	SD
1	[b] Household have access to formal safety net (e.g. food assistance, shelter and government/NGO assistant) in the community	139 (37.5%)	199 (53.6%)	33 (8.9%)	371 (100%)	2.09	1.04
2	[a] Market available for household to sell and buy agricultural products	33 (8.9%)	84 (22.6%)	254 (68.5%)	371 (100%)	3.23	1.17
3	Household have access to basic services (e.g. Roads, School, Healthcare, Police) in the community	21 (5.7%)	146 (39.4%)	204 (54.9%)	371 (100%)	3.22	1.04
4	Local government responded to community requests for improving community assets or services	62 (16.7%)	185 (49.9%)	124 (33.4%)	371 (100%)	2.91	1.18
5	Household participate in the decision-making process that concerns the community	92 (24.8%)	201 (54.2%)	78 (21.0%)	371 (100%)	2.29	1.33
						2.75	**0.53**

Key: A- Agreed (Strongly Agreed + Agreed), D-Disagreed (Strongly Disagreed + Disagreed), SD= Standard Deviation
[a] Absorptive Capacity Strength
[b] Absortive Capacity Challenge

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