Global Journal of STEM Education & Management Research

Adaptive Capacity of Schools to Disasters

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Received: January 27, 2026
Revised: February 27, 2026
Accepted: March 14, 2026

ABSTRACT

This study assesses the adaptive capacity of elementary schools to disasters, specifically evaluating this capacity across various asset determinants and school profiles. Utilizing a quantitative approach, data was gathered from 21 respondents using a standardized Disaster Risk Reduction Management (DRRM) instrument. The findings reveal that elementary schools exhibit high adaptive capacity in human and social assets, moderate capacity in physical and financial assets, and low capacity in natural assets. These capacity levels remained consistent regardless of the school's profile. Furthermore, statistical analysis showed no significant difference in adaptive capacity based on school size or location; however, a significant difference was observed based on school classification. The study concludes that while schools demonstrate resilience in human and social dimensions, they are vulnerable regarding natural assets. To address these gaps, it is recommended that authorities conduct comprehensive inspections of public-school infrastructure and design future school buildings with elevated floors to mitigate flood risks.

Keywords: Adaptive capacity, Disasters, Public elementary schools

How to Cite:

Delicana, E. D., & Geroso, M. J. S. (2026). Adaptive Capacity of Schools to Disasters. *Global Journal of STEM Education & Management Research*, 2(1), 186-194. https://doi.org/10.5281/zenodo.19019204

INTRODUCTION

More than 400 natural disasters occur annually, affecting over 230 million individuals and resulting in an average of nearly 75,000 fatalities (CRED, 2008). Globally, 450 cities with populations exceeding one million face recurring earthquakes. Furthermore, cyclones, typhoons, landslides, and hurricanes rank among the deadliest and most economically devastating of these events. Droughts and desertification currently impact 250 million people and threaten an additional 1.2 billion across 110 countries (UNESCO, 2007). Additionally, recurrent annual flooding consistently deprives millions of children of a complete academic year.

While these natural phenomena cannot be halted, the subsequent damage they inflict on human populations can be significantly mitigated. Although seismic activity and extreme weather events are inevitable, comprehensive risk assessment, strategic planning, physical and environmental safeguards, and robust response preparedness can prevent these hazards from escalating into full-scale disasters. Because educational institutions serve as universal centers for knowledge and skill dissemination, there are high expectations for schools to function as models of disaster prevention. Indeed, effective disaster mitigation represents a critical measure of the long-term success of the educational systems established across generations (Green & Petal, 2011).

Consequently, this study focuses on the adaptive capacity of educational institutions in response to specific hazards, including typhoons, earthquakes, floods, and the broader impacts of climate change. Adaptive capacity is defined as the ability of a system to adjust its characteristics or behaviors to better manage its exposure and sensitivity to environmental or climatic stressors. Although various factors are theorized to reflect adaptive capacity, explicitly defining this concept within vulnerability assessments remains a complex challenge (Adger & Vincent, as cited in Deocadiz, 2016).

Capacity is frequently quantified through resource availability (Preston et al., 2008). However, the institutional structures and governance networks required to mobilize these resources are equally critical, as numerous socio-political barriers can impede effective adaptation (Urwin & Jordan, as cited in Gallo, 2015). Consequently, the contextual nature of vulnerability, the complexities involved in validating indicators, and considerations of temporal scales present significant challenges to the development of robust measurement frameworks (Adger & Vincent, as cited in Deocadiz, 2016).

Driven by this rationale, this study investigates the adaptive capacity of public elementary schools to disasters within District VI, Division of Cadiz City.

OBJECTIVES OF THE STUDY

The primary objective of this study was to determine the adaptive capacity of public elementary schools in District VI, Division of Cadiz City, during the 2018–2019 academic year.

Specifically, this study sought to answer the following questions:

1. What is the profile of public elementary schools in District VI, Division of Cadiz City, based on the following characteristics:
    - 1.1 School size
    - 1.2 School location
    - 1.3 School classification
2. What is the level of adaptive capacity of these public elementary schools in terms of the following determinants, when grouped according to the aforementioned profile variables:
    - 2.1 Human assets
    - 2.2 Social assets
    - 2.3 Natural assets
    - 2.4 Physical assets
    - 2.5 Financial assets
    - 2.6 School management
3. Is there a significant difference in the adaptive capacity of public elementary schools in District VI, Division of Cadiz City, across the identified determinants when grouped by:
    - 3.1 School size
    - 3.2 School location
    - 3.3 School classification

LITERATURE REVIEW

The reviewed literature demonstrates that adaptive capacity is a multidimensional construct evaluated across diverse geographic contexts and sectors. A prominent theme across these studies is the assessment of adaptive capacity at the community and household levels in response to extreme climatic events. For instance, Eugenio et al. (2016) and Peñalba et al. (2014) both investigated the Philippines' vulnerability to typhoons, focusing on the recovery potential of rural villages and the gender-differentiated responses of individual households.

Beyond individual households, researchers have also targeted highly specific operational sectors to understand institutional resilience. Zukowski (2013) focused on the critical role of hospitals and healthcare systems during the disaster cycle. Similarly, Lockwood et al. (2015) examined rural landholders within agricultural landscapes , while Maldonado and Sanchez (2014) evaluated fishing communities residing near marine protected areas.

Methodologically, these prior studies highlight that adaptive capacity cannot be measured by a single determinant, prompting the creation of varied, specialized frameworks.

Indices and Frameworks

Hogarth and Wójcik (2015) utilized the Local Adaptive Capacity (LAC) framework to assess asset bases, knowledge, and institutional flexibility. Complementing this, Maldonado and Sanchez (2014) proposed a localized Index of Adaptive Capacity (IAC) focused on socioeconomic and socio-political dimensions.

Quantitative and Spatial Analysis

Other scholars have heavily relied on quantitative modelling. Zukowski (2013) used cross-sectional surveys and hierarchical regression to prove that pre-event planning predicts recovery outcomes. Furthermore, Chari and Hamandawana (2017) utilized geostatistical GIS mapping to explicitly identify spatial vulnerabilities among resource-poor municipalities, while Lockwood et al. (2015) employed a psychometric approach to measure the relative importance of different capacity dimensions.The concept of adaptive capacity remains contested, but can be broadly defined as the ability of individuals, communities, organizations, nations and other actors to adapt to the current and likely future effects of changes in the global climate (Klein et. al., 2014).

Finding reliable ways to measure adaptive capacity has been a top priority for researchers and policymakers, because the capacity to adapt is a necessary condition of successful adaptation1. Numerous indicators have been developed — including 'education, income, and health' as well as access to financial, technological and institutional resources1. However, early research on vulnerability and adaptive capacity indices failed to adequately justify the indicators selected to track adaptation potential(Hinkel, 2008; Smit & Wandel, 2006). Recent literature has attempted to overcome these limitations by articulating specific determinants of adaptive capacity and identifying the processes through which those determinants interact.

In a recent paper, Eakin *et al. (2014)* frame the relationship between socio-economic development and climate risk reduction as an interaction between 'generic' and 'specific' capacities and explore how those capacities might complement or undermine each other in different contexts. Similarly, the Local Adaptive Capacity (LAC) framework, developed in part by the Africa Climate Change Resilience Alliance, seeks to understand how different determinants of adaptive capacity influence each other at the household and community levels9. Both the LAC framework and the work of Eakin *et al.* argue that no single determinant of adaptive capacity is sufficient to explain the concept completely.

There appears to be growing agreement that knowledge represents an important determinant of adaptive capacity. Within several well-publicized research frameworks, knowledge is closely associated with many other determinants of adaptive capacity2. Within the LAC framework, for instance, knowledge is not only a dimension of adaptive capacity in itself, but is also represented within each remaining dimension proposed by the framework. Moreover, four out of the six factors that Adger *et al.* (2014) associate with adaptive capacity rely to some extent on knowledge. Knowledge also features prominently at the policy level, and the IPCC considers a 'lack of knowledge' to be a possible constraint on adaptation2. Furthermore, since the Marrakesh Accords in 2001, most international frameworks for capacity building related to climate change have emphasized the importance of producing and sharing high-quality knowledge (Adger *et al.,* 2014; UNFCCC, 2012).

In light of this work, we argue not only that knowledge is a powerful determinant of adaptive capacity, but also that framing adaptive capacity in terms of knowledge empowers actors to define adaptation on their own terms. This invites policy solutions that prioritize the production of useful climate change knowledge and its effective communication to actors at all scales. It is

important to note that the nature and usability of knowledge varies across scales, since priorities and decision-making processes vary from actor to actor, and that any reliable assessment of knowledge should be scale-specific (Adger *et al.,* 2009).

Adaptive capacity assessment is a significant component of vulnerability assessments because it aids the identification of resource-poor communities deserving priority consideration during the formulation of strategic responses to climate change (Gbetibouo, 2009) and the allocation of resources and provisioning of assistance. It is also useful in that it assists the governing of adaptation actions by facilitating effective and timely implementation of planned response measures. Climate change-driven afflictions are often difficult to respond to because climate change is a long-term continuous change in average weather conditions (Davis, 2011; IPCC, 2007; Marshall, 2014; Ramamasy and Baas, 2007; Rayner and Minns, 2015) with persistent adverse effects that require implementation of objectively informed interventions. Because climate change occurs over long period, the persistence of changes associated with it implies that interventions designed to mediate its effects have to be robust enough to enable vulnerable communities to cope with unpredictable stochastic events. The unpredictable nature of these events and their severity and duration often require recourse to high levels of flexibilities which resource-poor communities are often unable secure because their adaptive capacities are limited by poverty (IPCC, 2007).

Because low levels of flexibilities undermine the implementation of interventions by overstretching limited resources, the placement of well-versed adaptation strategies planned to augment human capacities to handle deteriorating climate conditions is critical, as adoption of effective strategies requires official acknowledgement of the non-transient character of current trends in climatic change (Hamandawana, 2007). The assessment of adaptive capacity provides decision makers on global, regional, national and local levels' useful information that helps to improve climate change adaptation policies (Juhola and Kruse, 2015; Smith et al, 2010).Such information is extremely necessary in regions of the world like Southern Africa which is widely considered to be extremely vulnerable to climate change because of limited livelihood options, poorly developed infrastructure (Ziervogel et al., 2006), different forms of human insecurity (Davies et al, 2010), the high prevalence resource-poor households (IPCC, 2007) and dependence on climate-sensitive sectors notably agriculture (Ambrosinoet al., 2010).

Resource-poor communities are usually situated within rural areas which are susceptible to drought (Phaswana-Mafuya and Olsson, 2008). In South Africa, observations over 43 years before year 2003 point to a steady increase in temperatures with projections estimating increases by 1.2°C by 2020, 2.4°C by year 2050 and 4.2°C by the year 2080 while rainfall is projected to reduce by 5.4 per cent, 6.3 per cent and 9.5 per cent by year 2020, 2050 and 2080, respectively (Kruger and Shongwe, 2004). In similar studies, Department of Environmental Affairs (2013) and Erasmus (2014) have also pointed out to future increase in temperatures and rainfall reductions within South Africa with the latter being corroborated by a reported 4 per cent decrease for the rest of Southern Africa during the last century (UNECA - United Nations Economic Commission for Africa, 2011). Although the reliability of this estimate is contestable, Southern Africa has exhibited high inter-annual rainfall variability from the beginning of the second half of the past century (Conway et al., 2009) which is likely to force much of South Africa's rural agriculture out of production (Bauer and Scholz, 2010).

These scenarios are indicative of climate change in the entire country and signal immediate need to embrace appropriately informed intervention strategies. Despite the breadth of these assessment methodologies, Engle (2011) observes that adaptive capacity remains a relatively under-researched topic within global change communities. A critical examination of the aforementioned literature reveals a significant sectoral gap. While extensive research has quantified the adaptive capacity of healthcare systems, agricultural landholders, marine management zones, and individual households, there is a distinct lack of empirical investigation directed at educational institutions. Schools operate as foundational social institutions and critical community shelters during disaster events; however, existing studies have not adequately adapted frameworks like the LAC or IAC to measure the specific asset bases of public elementary schools. Therefore, this current study intends to address this empirical gap by systematically determining the adaptive capacity of public elementary schools. By shifting the focus from broad municipal demographics and healthcare systems to micro-level educational facilities, this research provides a highly contextualized institutional assessment necessary for comprehensive disaster risk reduction planning.

METHODOLOGY

Research Design

This study aimed to determine the public elementary schools in District VI Division of Cadiz City adaptive capacity to disasters; hence the descriptive research design was used. Castillo (2007) describes descriptive research as a method that defines the nature of existing conditions, or to determine the relationship that exist between variables (Castillo 2007). On the other hand, Latin and Berg (2004) expressed that descriptive research is typified by observations or descriptions of the status of a condition or situation. Investigators using this method do not manipulate variables or make things happen.

Respondents of the Study

The respondents of the study were the public elementary school teachers, school heads, and DRRM coordinators of Cadiz District VI, Division of Cadiz City. To determine the actual participants of the study, total enumeration was used sense the researcher believes that the number of public elementary school teachers, school heads, and DRRM coordinators is manageable.

Data Gathering Procedures

In the conduct of the study, permission from the school authorities of the Division of Cadiz City was asked by the researcher for the conduct of the research instrument to the participating schools. These are the public elementary teachers, DRRM coordinators, and school heads in District VI Division of Cadiz City. After acquiring the data, these data were tallied, tabulated, analysed, and interpreted according to the specific problems, and hypotheses set forth in this investigation.

Data Analysis

Data derived from the survey were encoded and analysed using the Statistical Package for the Social Sciences. Ratings of SACI obtained from the survey with teachers, school heads, and DRRM coordinators is a combination of ordinal, interval, and ratio scale values. Since there was no uniformity in the scale and in the level of scores for the different indicators, all the scores obtained from the respondents was rescaled to a range of 0 to 1. Using the normalization procedure of the United Nations Development Program (UNDP) applied in determining the Human Development Index (Swanson et al. 2007) shown below. Modified Normalization Equations for UNDP HDI. For indicators where higher obtained values are better this equation was used.

$$\text{Rescale Value} = \frac{\text{Obtained Value} - \text{Minimum Value for the Indicator}}{\text{Maximum Value for the Indicator} - \text{Minimum Value for the Indicator}}$$

For indicators where lower obtained values are better, this equation was used.

$$\text{Rescale Value} = \frac{1 - (\text{Obtained Value} - \text{Minimum Value for the Indicator})}{\text{Maximum Value for the Indicator} - \text{Minimum Value for the Indicator}}$$

The average of all the rescaled indicator scores for all the respondents in each school were computed to get the indicator value for the school. The indicators under each determinant were given equal weight. Being equally important, the average of the different indicators under each determinant was computed to get the determinant value. Again, assuming equal importance in each of the determinants, the average of all the determinant scores was likewise computed to obtain the overall SACI for the particular school (procedure adopted with modifications from Peñalba and Elazegui 2011).

The scale used by Yusuf and Francisco (2010) for determining the adaptive capacity of different provinces of ASEAN countries based on socio-economic factors, technology and infrastructure was modified and reflected in Table 2. This served as the basis for classifying the overall SACI and the performance in each of the main determinants and the indicators for each school. Mean scores in each of the assets and in the SACI scores were compared between schools classified in terms of school's location and school's classification using the Independent Samples t-test.

Statistical Analysis

To answer the research problems proposed in this study, the following descriptive and inferential statistics were used:

For problem 1, which answered question on school profile, frequency and percentage were used.

For problem 2 which answered question on the adaptive capacity of elementary schools to disasters as a whole and in terms of the determinants when grouped according to school profile mean was used.

For problems 3 which determined significant differences on the adaptive capacity of elementary schools to disasters as a whole and in terms of the determinants when grouped according to school profile t-test for independent means and ANOVA were used.

RESULTS AND DISCUSSION

The empirical findings of this study provide a critical, multifaceted view of the adaptive capacity of public elementary schools in District VI, Division of Cadiz City. While the schools exhibit a moderate adaptive capacity overall, a detailed examination of the individual asset determinants reveals significant disparities. These disparities highlight both the institutional strengths of the educational sector and its deep-seated environmental and infrastructural vulnerabilities.

Table 1

Adaptive Capacity of Public Elementary Schools as a Whole

Determinants	Mean	SD	Interpretation
Human Assets	0.84	0.07	High
Social Assets	0.70	0.27	High
Natural Assets	0.42	0.13	Low
Physical assets	0.63	0.17	Moderate
Financial Assets	0.51	0.09	Moderate
School Management	0.71	0.07	High
As a Whole	0.63	0.09	Moderate

The data reveals that the primary drivers of resilience in these public elementary schools are their "soft" assets: Human Assets (0.84), School Management (0.71), and Social Assets (0.70). The high capacity in these areas implies that school personnel possess strong instructional leadership, a high willingness to adapt, and robust networks of community support. Teachers and administrators act as the primary engines of disaster preparedness, actively engaging local government units and parent-teacher associations to compensate for physical shortfalls.

These findings strongly align with the Local Adaptive Capacity (LAC) framework utilized by Hogarth and Wójcik (2015), which characterizes adaptive capacity not just by physical wealth, but through the strength of institutions, knowledge, and flexible governance. Furthermore, the high scores in Human Assets and School Management reflect the critical role of *knowledge* as a powerful determinant of adaptive capacity. As noted by Klein (2014) and the IPCC, knowledge allows institutional actors and communities to anticipate environmental changes and plan effective responses. The predictive power embedded in the schools' management systems lays the groundwork for successful adaptation, shifting their approach from passive acceptance to proactive disaster risk reduction.

In stark contrast to their human capital, the schools demonstrated only a moderate capacity in Physical and Financial Assets, and a critically low capacity in Natural Assets (0.42). The low natural asset score suggests that these schools are geographically exposed to natural risk factors, such as poor land/water resource conditions or proximity to flood-prone areas, with limited natural buffers.

This human-nature dichotomy mirrors the observations of Spires et al. (2014), who argued that poorer or more exposed sectors often exhibit high degrees of vulnerability (high exposure to harm) that must be constantly tempered by high human/social adaptive capacity to ensure survival. However, as Eakin et al. (2014) warn, there are limits to adaptation; actors with low generic capacities or severe infrastructural constraints may face limits to adaptation that no amount of human knowledge can fully overcome. The low natural and moderate physical capacities found in this study imply that without external infrastructural intervention, the schools' physical vulnerabilities could eventually overwhelm their human resilience during catastrophic events, like the severe loss and damage caused by extreme weather phenomena like Typhoon Bopha documented by Eugenio et al. (2016).

Table 2

Adaptive Capacity of Public Elementary Schools when grouped According to School Location

Determinants	School Location	Mean	SD	Interpretation
Human Assets	Upland	0.78	0.04	High
	Coastal	0.92	0.00	High
	Plain	0.88	0.04	High

	Upland	0.48	0.29	High
Social Assets	Coastal	0.84	0.00	High
	Plain	0.86	0.04	High
	Upland	0.46	0.13	Low
Natural Assets	Coastal	0.27	0.00	Low
	Plain	0.43	0.12	Low
	Upland	0.49	0.06	Low
Physical assets	Coastal	0.54	0.00	Moderate
	Plain	0.80	0.09	High
	Upland	0.44	0.04	Low
Financial Assets	Coastal	0.50	0.00	Moderate
	Plain	0.57	0.12	Moderate
	Upland	0.69	0.04	High
School Management	Coastal	0.75	0.14	High
	Plain	0.71	0.06	High
	Upland	0.56	0.07	Moderate
As a Whole	Coastal	0.64	0.02	High
	Plain	0.71	0.02	High

When analyzed by location, schools in upland areas demonstrated the lowest overall adaptive capacity (0.56) compared to coastal (0.64) and plain areas (0.71). Upland schools scored particularly low in Social (0.48), Natural (0.46), Physical (0.49), and Financial (0.44) assets. The geographic isolation of upland schools inherently restricts their access to emergency safety facilities, limits communication infrastructure, and isolates them from rapid external community support.

This confirms the necessity of spatially explicit vulnerability assessments, as advocated by Chari and Hamandawana (2017). Their geostatistical research in South Africa demonstrated that adaptive capacity is highly spatially variable, and geographical isolation acts as a multiplier for disaster risk. Because disaster impacts are location-specific, the vulnerabilities of upland schools highlight the need to move away from "one-size-fits-all" district policies and instead direct targeted interventions to geographic hotspot areas where they are most urgently needed.

Table 3

Adaptive Capacity of Public Elementary Schools when Grouped According to School's Classification

Determinants	School Classification	Mean	SD	Interpretation
Human Assets	Central	0.92	0.00	High
	Noncentral	0.83	0.07	High
Social Assets	Central	0.84	0.00	High
	Noncentral	0.67	0.28	High
Natural Assets	Central	0.28	0.00	Low
	Noncentral	0.44	0.12	Low
Physical assets	Central	0.91	0.00	High
	Noncentral	0.58	0.13	Moderate
Financial Assets	Central	0.71	0.00	High
	Noncentral	0.47	0.04	Low
School Management	Central	0.70	0.05	High
	Noncentral	0.71	0.07	High
As a Whole	Central	0.72	0.01	High
	Noncentral	0.62	0.08	Moderate

The statistical analysis revealed significant differences in adaptive capacity based on school classification. Central schools exhibited a significantly higher adaptive capacity (0.72) than Non-Central schools (0.62), particularly in Physical and Financial Assets. Central schools, typically situated in the economic or administrative hubs of a district, benefit from closer proximity to municipal DRRM offices, faster relief distribution, and priority in infrastructure funding. This institutional disparity supports the assertions of Engle (2011), who emphasized that analyzing governance and institutional management is vital to understanding who possesses adaptive capacity. The "distance" from the center of governance creates socio-political barriers

for the 85.7% of respondents in Non-Central schools, impeding their successful adaptation. Additionally, while school size did not significantly alter *overall* capacity, large schools heavily outperformed smaller schools financially. As Lockwood et al. (2015) found in their psychometric approach to measuring capacity, individual financial capacity and available labor are critical dimensions of perceived resilience. Larger schools benefit from economies of scale and larger operational budgets, providing a financial "buffer" during emergencies that small schools severely

Table 4

Differences in the Adaptive Capacity of Public Elementary Schools When Grouped According to Size

Determinants	Sources of Variation	Sum of Squares	Df	Mean Square	F	ρ	Interpre-tation
Human Assets	Between Groups	0.02	2	0.01	2.01	0.16	Not Significant
	Within Groups	0.09	18	0.01			
	Total	0.11	20				
Social Assets	Between Groups	0.20	2	0.10	1.47	0.26	Not Significant
	Within Groups	1.22	18	0.07			
	Total	1.42	20				
Natural Assets	Between Groups	0.12	2	0.06	5.38	0.02	Significant
	Within Groups	0.20	18	0.01			
	Total	0.32	20				
Physical assets	Between Groups	0.28	2	0.14	9.09	0.01	Significant
	Within Groups	0.28	18	0.02			
	Total	0.55	20				
Financial Assets	Between Groups	0.16	2	0.08	81.81	0.00	Significant
	Within Groups	0.02	18	0.01			
	Total	0.18	20				
School Management	Between Groups	0.01	2	0.005	0.05	0.95	Not Significant
	Within Groups	0.09	18	0.01			
	Total	0.09	20				
As a Whole	Between Groups	0.04	2	0.01	2.62	0.10	Not Significant
	Within Groups	0.12	18				
	Total	0.15	20				

As shown in this table, there is no significant difference in the level of adaptive capacity of public elementary schools when grouped according to size as supported by F-ratio of 2.62 with the p value of = 0.10). Likewise, when determinants were considered individually, there is no significant difference in the adaptive capacity of public elementary schools in terms of human assets, social assets and school management, however significant differences were observed in terms of natural, physical, and financial assets. Results presented in this regard can be taken to mean that school's adaptive capacity when grouped according to school size does not differ significantly as a whole and in terms of human assets, social assets and school management but differ significantly in terms of natural, physical, and financial assets. This means that the level of their adaptive capacities is almost the same in terms of the human assets, social assets and school management. On the other hand, using post hoc analysis, significant differences were observed between small and big schools and between medium schools and big schools.

CONCLUSION

Based on the thorough analysis of the data gathered regarding the adaptive capacity of public elementary schools in District VI, Division of Cadiz City, the major conclusions are drawn that the Public elementary schools in District VI Division of Cadiz City can adjust to changes and can respond to perceived risk or opportunity. Their adaptive capacities towards disasters are found in the determinants such as human assets, social assets, and school management. However, they have less adaptive capacities towards disasters in terms of natural assets. Schools are not near to emergency and safety facilities. Small size public elementary schools have adaptive capacities but not on natural assets. In small schools there are presence of natural risk factors especially in the state of land and water resources; nearness of the school to emergency and safety facilities; and, the dependence of households on natural resources for their livelihood. Central schools have better adaptive capacities than noncentral schools. They have developed adaptive capacities in almost all of the determinants but not in natural assets.

Public elementary schools in the upland areas have better adaptive capacities than public elementary schools in the plain areas and coastal areas.Small, medium, and big public elementary schools have almost the same level of adaptive capacities in terms of human assets, social assets, and school management. However, the level of their adaptive capacities varies in terms of natural,

physical, and financial assets. Big schools have better adaptive capacities than medium and small schools in terms natural and finacial assets. They can easily look for supports especially to NGOs and likewise, they are near to DRRM which is easy for them to access help in case of emergency than small school which are located in some remote areas. Central and noncentral school have different adaptive capacities. They differ in their adaptive capacities in natural, physical, and financial favoring the central schools. Central schools have better adaptive capacities than noncentral schools. However, they have the same level of adaptive capacities in terms of human, social, and school management. Public elementary school in the upland, coastal and plain areas vary differently in the level of their adaptive capacities in almost all of the determinants except on natural assets and school management. Schools in the plain areas have better adaptive capacities than schools in the upland and coastal areas. Accessibility to ask help in case of emergency was the advantage of those schools in the plain areas because transportation is quite easy for them.

RECOMMENDATIONS

It is recommended that DRRM centers in the nearby areas especially those in the upland areas and coastal areas should be provided. the nearby communities are encouraging not to only depend their livelihood on natural resources as it was found that the have low adaptive capacity in terms of natural assets.

The examination of school buildings and other school properties among public schools should be undertaken so as to secure the different areas of concern especially in school buildings and facilities.

School officials are advised to recommend school building to be built with upper floors for flooding purpose. Since some schools have poor adaptive capacities in terms of financial assets especially thos small schools, in this regard school heads are encouraged to establish linkage among NGOS for financial supports on matters related to Disaster Risk Reduction Management (DRRM).

Similar studies may be conducted in some other school districts to look into the level of their adaptive capacities to disasters. Similar study is also encouraged utilizing other school related variables not mention in the present study.

Conflict of Interest

The authors must disclose any potential conflicts of interest, financial or otherwise, that could be perceived to influence the work.

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