

---

## Public Administration and Disaster Management: Assessment on the Prevention, Preparedness, Response, and Recovery efforts of the Cebu City Government to Typhoon Odette

Roteza Gloria B. Cantillas, & Marecon C. Viray

Cebu Institute of Technology- University, Cebu, Philippines

DOI - <http://doi.org/10.37502/IJSMR.2023.6104>

---

### Abstract

This study attempted to evaluate how the city integrated all of its disaster management measures to already ease the hardships of the populace. With the aid of a validated survey questionnaire created by the researcher, the results were gathered by convenience sampling. Utilizing frequency and percentage distribution, the data were examined. According to the results, women make up the majority of respondents, and they tend to be between the ages of 26 and 35. The results showed that at least 56 percent of respondents are aware, while 44 percent are unaware of the government's initiative. Findings showed 52 percent were minimal which means no roof/wall detached during the Typhoon Odette, 40 percent were moderate, or some roof or wall detached, while 8 percent were severe, or all roof/ wall was detached when it comes to the severity of damage. Furthermore, the respondent's level of satisfaction with the prevention, preparedness, and response measures taken by the Cebu City Government during Typhoon Odette stated that 62 percent of respondents, or the majority, expressed a moderate level of satisfaction with the initiatives and measures implemented, compared to 30 percent who expressed a low level of satisfaction and only 8 percent who expressed a high level of satisfaction. The researchers suggest this study to help identify the crucial areas to concentrate on and to strengthen in order to improve the local community's management of disaster risk and reduction in the years to come.

**Keywords:** disaster management; recovery efforts, Typhoon Odette; Cebu City

---

### 1. Introduction

The Philippines is prone to a variety of natural disasters, including earthquakes, volcanic eruptions, tropical cyclones or typhoons, and other calamities. This is because the nation is situated in the western Pacific Ocean's typhoon belt, where roughly one-third of the world's tropical storms form. The world's most active region, it also experiences the strongest storms.

The Philippines is already being affected by climate change, to the extent, it was considered the country fourth most affected by climate change in the world over the past two decades. (Global Climate Risk Index 2021). The nation is especially vulnerable to climate change-related phenomena, such as sea level rise, an increase in the frequency of extreme weather conditions, rising temperatures, and excessive rains. This is because the archipelago, which is home to the majority of the country's people and the country's major cities, is vulnerable to natural disasters, relies on climate-sensitive natural resources, and has a long coastline. (Center For Excellence in Disaster Management & Humanitarian Assistance, 2021)

In the report of Commission on Audit in 2014, it was found out that the Philippines does poorly when it comes to managing disasters, especially when it comes to managing finances, information, leadership, monitoring, collaboration, and coordination with different stakeholders. Disaster preparedness plans reduce future damages, but may lack testing to assess their effectiveness in operation (Dariagan, et.al, 2021).

Thus, the Philippines has increasingly developed disaster management capabilities at the national and local levels. When compared to other levels of government, local governments do have more important roles in disaster management. Being close to the people and by virtue of its sheer mandate for local leadership in its functional area, local governments have a greater responsibility to take all possible efforts to forecast, prepare and meet any such eventualities. Local knowledge about the resources, facilities and support systems, and alternative options are crucial in disaster management. During disasters, people look up to the local government at first instance, for addressing their basic needs and concerns. And to perform up to their expectation, the local governments must be adequately equipped too (Karad, 2011).

Super typhoon "Rai," also known as "Odette" locally, surprised everyone. Just two days before the typhoon caused devastation in the places it traveled through; it was predicted to be a tropical depression with strong gusts and heavy rain. And Cebu City did not escape her wrath. The Cebu City Government, along with all of its various departments and special bodies, prepared and prepositioned people and resources during the crucial days prior to the impending disaster in order to be able to quickly respond to anticipated infrastructure destruction as well as potential threats to the citizens of Cebu City as a result of the effects of the super typhoon. But even with the preparations in place, no one was prepared for the disaster that Odette wrought on Cebu City and the other areas where she passed, sparing nothing - trees, houses, cables, and other structures that could not withstand the extremely strong winds.

### **1.1. Statement of the Problem**

According to the Philippine Atmospheric, Geophysical and Astronomical Services Administration's (PAGASA) Tropical Cyclone Bulletin No. 13, Tropical Cyclone Warning Signal No. 3 brought by typhoon Odette was experienced in southern and central portions of Cebu, Southern portion of Leyte, the rest of Bohol. Siquijor, the Southern and Central portions of Negros Occidental, Guimaras, Northern portion of Agusan Del Norte and Northern portion of Surigao Del Sur. With a maximum sustained winds of 162 kph and Gustiness of 255 khp.

Cebu City and other badly damaged cities have encountered several difficulties, particularly during the reaction and restoration, despite the warnings made by various national and local agencies. To ensure the security and welfare of the stakeholders, it is critical to emphasize the involvement of the government.

The following questions will help in the assessment on how the LGU of Cebu City administer the thematic areas of Disaster Management to Typhoon Odette.

1) Measures made by the Cebu City Government on Disaster Prevention and Mitigation on the following:

- a. Awareness to Ordinances of the City on Disaster Management.
- b. Resiliency of Residential Houses to Typhoon

- c. Hazard and Risk Area
- 2) Measures made by the Cebu City Government on Disaster Preparedness
  - a. Establishment of Incident Control Center
  - b. Awareness of the local on the impact of the Typhoon
  - c. Capacity of the community to threats and all hazards
  - d. Capability to cope with the impacts of the Typhoon 8
- 3) Measures made by the Cebu City Government on Disaster Response
  - a. Relief Operations
  - b. Assistance from other neighboring cities and municipalities
  - c. Prompt assessment of needs and damages
  - d. psychological services
- 4) Measures made by the Cebu City Government Disaster Rehabilitation
  - a. Post Disaster Needs Assessment
  - b. Livelihood and income loss assistance

### 1.2. Conceptual Framework

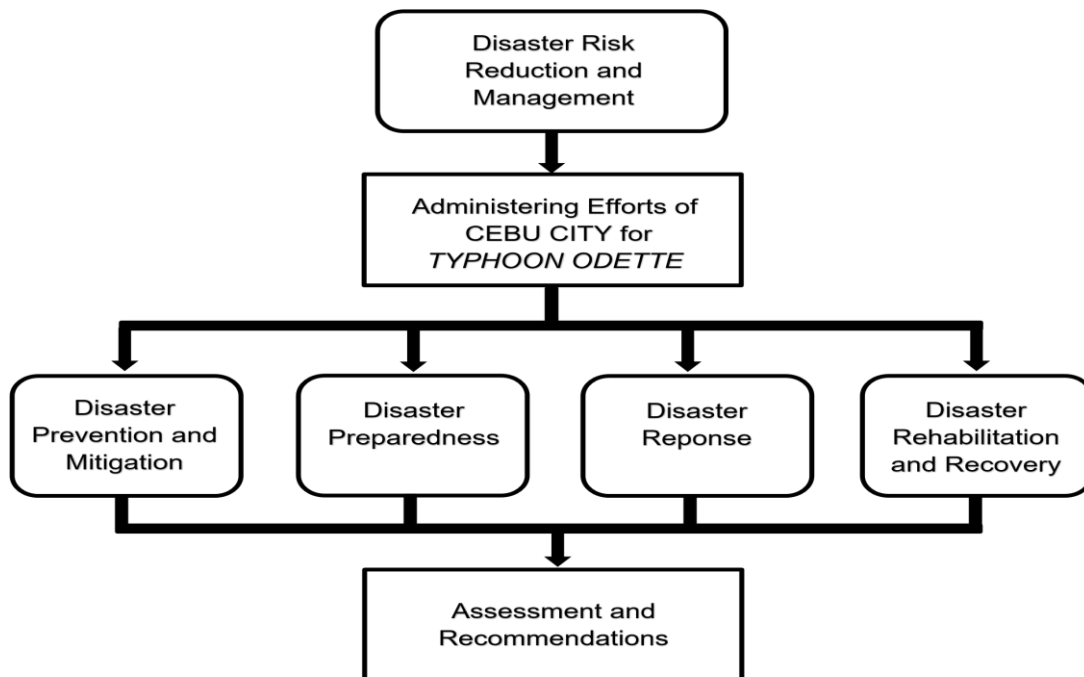


Figure 1. Conceptual Framework

The conceptual Framework in Figure 1 shows the flow in order to derive with the objective of this study. The Philippine Laws emphasizes the participation of the Local Government in the Disaster Management. Disaster Risk Reduction as defined, is the systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies. The National Disaster Risk Reduction Management covers four thematic areas,

namely, (1) Disaster Prevention and Mitigation; (2) Disaster Preparedness; (3) Disaster Response; and (4) Disaster Rehabilitation and Recovery.

In the boxes shown, the administering efforts of the Cebu City Government on the different thematical areas are the variable where assessment and recommendations need to arise, whether the distinct yet mutually reinforcing thematic areas are delivered as defined:

#### 1) Disaster Prevention and Mitigation

The outright avoidance and lessening or limitation of adverse impacts of hazards and related disasters.

#### 2) Disaster Preparedness

Capacities developed by governments, professional response and recovery organizations, communities, and individuals to effectively anticipate, respond to, and recover from the impacts of likely, imminent, or current hazard events or conditions.

#### 3) Disaster Response

The provision of emergency services and public assistance during immediately after a disaster in order to save lives, reduce negative health impacts, ensure public safety and meet basic subsistence needs of the people affected.

#### 4) Disaster Rehabilitation

Restore and improve facilities, livelihood and living conditions and organizational capacities of affected communities, and reduced disaster risks in accordance with the “building back better” principle.

### 1.3. Objectives of the Study

It has been a year since Super Typhoon Odette, known to be the second costliest typhoon in Philippine history next to Typhoon Yolanda, has changed the life of every Cebuano. This study aims to undertake the initiative of gathering all the accounts, data and reports surrounding the disaster and compiling them all in order to make an assessment of how the city incorporated all their efforts in disaster management to alleviate the difficulties of the citizenry already reeling from the effects of a deadly pandemic, and also, through this study, assessment on the efforts made by the local government will help to realize the needed areas to focus and to strengthen in order to enhance the management on Disaster Risk and Reduction in the locality in the years to come.

## 2. Methodology

**2.1. Research Design-** This study employed a descriptive survey design. Descriptive studies “describe, and interpret the current status of individuals, settings, conditions, or events” (Mertler, 2014). As a result, the method for collecting the data involved using a structured questionnaire, and the frequency count, percentage, and mean were used in the analysis and interpretation of the results.

**2.2. Research Respondents-** A total of 50 responses were collected. The respondent of the study is limiting only to the victims of Typhoon Odette specifically the residents of Cebu City Province.

**2.3. Data Gathering Procedure-** The primary data was gathered from the field through the use of a structured questionnaire. The structured questionnaire was divided into three parts. The first part was the demographic profile of the respondents. The second part dealt with the measures made by the Cebu City LGU Government on Disaster prevention, response, and mitigation. And the third part is concerned with the perceived level of satisfaction of respondents with regards to the initiatives done by city government.

### 3. Results and Analysis

#### 3.1 The Demographic Profile of the Respondents

**Table 1. Frequency and Percentage Distribution of the Respondent's Age**

Age	Frequency	Percent
18-25	12	24
26-35	17	34
36-45	11	22
45 above	10	20
<b>Total</b>	<b>50</b>	<b>100</b>

The age profile of the responders is shown in Table 1. The great majority of responses, as seen, were between the ages of 26 and 35. In contrast, the percentages for the age groups 18 to 25, 36 to 45, and 45 and above were 25 percent, 11.25 percent, and 2.5 percent, respectively.

**Table 2. Frequency and Percentage Distribution of the Respondent's Gender**

Gender	Frequency	Percent
Male	16	32
Female	34	68
<b>Total</b>	<b>50</b>	<b>100.0</b>

The gender profile of the responders is seen in Table 2. Out of 50 responses, 16 or 32 percent are men, followed by 34 or 68 percent of women. This merely indicates respondents were dominated by female. Furthermore, as indicated by the Philippine Statistic Authority (2013), the populace that creates the Philippines is 51% female, and 49% male. These claims were confirmed in the data gathered in the sense that female respondents outnumbered the male respondents in this study.

**Table 3. Frequency and Percentage Distribution of the Respondent's Civil Status**

Civil Status	Frequency	Percent
Single	26	52
Married	23	46
Widowed	1	2
<b>Total</b>	<b>50</b>	<b>100.0</b>

The profile of the respondents in terms of their civil status is shown in Table 3. Out of 50 respondents, it is evident from the table that the majority, or at least 52 percent, belong to the single demographic. The married and widowed gym-goers are followed by 46 percent and 2 percent, respectively.

**Table 4. Frequency and Percentage Distribution of the Respondent's Educational Attainment**

<b>Educational Attainment</b>	<b>Frequency</b>	<b>Percent</b>
Grade School	2	4
High School	2	4
Vocational Education	6	12
Bachelor's Degree	27	54
Post-Graduate	13	26
<b>Total</b>	<b>50</b>	<b>100.0</b>

The table 4 lists the respondents' educational backgrounds and shows that the majority, 27 or 54 % of the respondents, had a bachelor's degree, 13 or 26 percent has a post-graduate degree, while there were 12 percent of vocational education, while the same 4 percent of the respondents for grade school and high school.

**Table 5. Frequency and Percentage Distribution of the Respondent's Monthly Income**

<b>Income</b>	<b>Frequency</b>	<b>Percent</b>
20,000 and less	18	36
20,001 – 40,000	9	18
40,001 – 60,000	8	16
60,001 – 80,000	7	14
80,001 and above	8	16
<b>Total</b>	<b>50</b>	<b>100.0</b>

The respondents' monthly incomes are shown in Table 5. As indicated in the data, it shows that 18 or 36 percent of the respondents are having a monthly income of 20,000 and less, there were 9 or 18 percent of the respondents who had a 20,001 to 40,000 income also.

**Table 6. Measures made by the Cebu City Government on Disaster Prevention and Mitigation**

<b>Indicators</b>	<b>Aware</b>		<b>Unaware</b>	
	<i>f</i>	%	<i>f</i>	%
I am aware of the city ordinances pertaining to Local Disaster Risk and Management.	28	56	22	44

Table 6 depicts respondents' knowledge of disaster prevention and mitigation measures implemented by the Cebu City government. It was discovered that at least 56 percent of respondents are aware, while 44 percent are unaware of the government's initiative. This finding is supported by RA 7160, or the Local Government Code of 1991, which stipulates that LGUs have the responsibility to undertake rescue operations, provide immediate relief assistance, and set up and manage evacuation centers at the first instance of disaster occurrence. With these findings, it is encouraged that a local government must strengthen management when it comes to delivering its services to residents and victims of any disasters.

**Table 7. Resiliency of Residential Houses to Typhoon**

Indicators	Minimal		Moderate		Severe	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
How severe was the damage the typhoon caused to your houses?	26	52	20	40	4	8

Table 7 presents the resiliency of residential houses to typhoon in Cebu City. It was found out that 52 percent were minimal which means no roof/wall detached during the Typhoon Odette, 40 percent were moderate, or some roof or wall detached, while 8 percent were severe, or all roof/ wall was detached. According to the Humanitarian Needs and Priorities Revision report, almost 1.7 million houses have been assessed as damaged as of January 2022, a significant rise from the initial projections of around 200,000 houses damaged or destroyed in the initial assessments. Of these, 415,000 have been completely demolished. The provinces with the highest percentage of fully destroyed residences are Cebu, Bohol (Region VII), and Surigao del Norte (Region XIII).

**Table 8. Hazard and Risk Area**

Indicators	Yes		No	
	<i>f</i>	%	<i>f</i>	%
In the course of the havoc of the typhoon, did landslide or flooding occur?	10	20	40	80
Are you aware that there is an incident command center established by the LGU for any disaster assistance?	28	56	22	44
Are you aware of the signal/strength and impact of the typhoon?	41	82	9	18
Were you able to stock for basic needs such as water, food, and fuel?	35	70	15	30
Were you informed by the Barangays of the possible evacuation areas	16	32	34	68

Table 8 shows the level of awareness of the respondents towards the hazards and risks of Typhoon Odette as perceived by the victims or affected respondents. As previously stated, 80 percent of respondents reported no landslides during Typhoon Odette. On the other hand, 56 percent of the respondents were aware that there was a command center for disaster resistance, while it is important to note that 82 percent of the respondents were aware of the strength and impact of the typhoon before it occurred so that they would be able to prepare and evacuate to the nearest evacuation center. In addition, 70 percent of the respondents say that they were able to stock up on basic needs before the typhoon occurred. With regards to the information about the possible evacuation area, there was a contradicting result, which shows that 68 percent were not aware of the barangay's possible evacuation area. Over all, the results have a positive implication for the government initiative since they show the highest level of awareness about the disaster.

**Table 9. Measures made by the Cebu City Government on Disaster Response**

Indicators	Yes		No	
	<i>f</i>	%	<i>f</i>	%
Did you receive any government aid such as food, or monetary assistance?	30	60	20	40
Were there help given from other Local Government Units?	20	40	30	60
Was your main thoroughfare blocked? If yes, was it cleared immediately?	28	56	22	44
Was there help given LGU in order to overcome trauma ?	4	8	46	92
Did the LGU conduct the Post Disaster Needs Assessment in your locality?	12	24	38	76
Are you informed of any programs given by the LGU to business / employees affected	13	26	37	74

Table 9 lists the steps taken by the city government to prepare for disasters. As said, 60% of respondents concur that they received government assistance, such as food and financial aid; nevertheless, a second indicator shows a different picture, with at least 60% of respondents claiming they did not receive assistance from the local government unit. When it comes to disaster response, it is advised that LGUs focus on the holistic care of their constituents, particularly on the psychological state of the victim. This is because a significant percentage of respondents—92 percent—said they received no assistance in order to deal with the trauma of the disaster.

In contrast, when asked if the LGU did a post-disaster needs assessment, 76% of the respondents indicate no. According to the Global Facility for Disaster Reduction and Recovery's (2013) report, the Post Disaster Needs Assessment, or PDNA, is a method for analyzing disaster effects and disaster impact in order to identify recovery needs. It is an integrated process that includes a variety of analytical methods, tools, and techniques that have been developed for post-disaster assessments and recovery.

**Table 10. Level of Satisfaction**

Indicators	High		Moderate		Low	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
I am satisfied with the prevention, preparedness, and response conducted by the Cebu City Government	4	8	31	62	15	30

The respondent's level of satisfaction with the prevention, preparedness, and response measures taken by the Cebu City Government during Typhoon Odette is shown in Table 10. As previously said, 62 percent of respondents, or the majority, expressed a moderate level of satisfaction with the initiatives and measures implemented, compared to 30 percent who expressed a low level of satisfaction and only 8 percent who expressed a high level of



satisfaction. Therefore, if it is done thoroughly, this calls for the government to enhance, review, and assess the interventions and measures supplied appropriately.

#### **4. Summary of Findings, Conclusions, and Recommendation**

##### **4.1. Summary of Findings and Conclusions**

This study attempted to evaluate how the city integrated all of its disaster management measures to already ease the hardships of the populace. The study utilized the descriptive survey method, the data collected were presented and analyzed with the use of frequency and percentages. With the aid of a validated survey questionnaire created by the researcher, the results were gathered by convenience sampling. According to the results, women make up the majority of respondents, and they tend to be between the ages of 26 and 35. The result shows that 18 or 36 percent of the respondents are having a monthly income of 20,000 and less, there were 9 or 18 percent of the respondents who had a 20,001 to 40,000 income also.

The results also showed that at least 56 percent of respondents are aware, while 44 percent are unaware of the government's initiative. Findings showed 52 percent were minimal which means no roof/wall detached during the Typhoon Odette, 40 percent were moderate, or some roof or wall detached, while 8 percent were severe, or all roof/ wall was detached when it comes to the severity of damage. Furthermore, the respondent's level of satisfaction with the prevention, preparedness, and response measures taken by the Cebu City Government during Typhoon Odette stated that 62 percent of respondents, or the majority, expressed a moderate level of satisfaction with the initiatives and measures implemented, compared to 30 percent who expressed a low level of satisfaction and only 8 percent who expressed a high level of satisfaction.

This study concludes that when preventive measures and response is done thoroughly levels of satisfaction will improve, hence this calls for the government to enhance, review, and assess the interventions and measures supplied appropriately.

##### **Recommendations**

Based on the findings and conclusions of the study, the following recommendations were formulated:

The LGU should establish a system of information dissemination so that all constituents will be informed on the different measures and initiatives when in it comes to disaster preparedness and prevention. The social delivery system of the LGU-Disaster Risk Management still needs to be strengthened or improved. It is necessary to conduct post-disaster needs assessment, psychological assistance to typhoon victims to ensure holistic care among its constituents. The LGU-Cebu must strengthen partnership program with NGO'S in the delivery of preventive measures and prevention especially involve the school for conducting seminar workshop, DSWD for psychological assistance to the affected or victims of typhoon.

Future researches should be conducted in order to prove the findings of this study and to explore other areas or aspects of the LGU of Cebu City in delivering preventive measures towards other disasters.

**References**

- 1) D.E. Alexander, Resilience and disaster risk reduction: an etymological journey, *Nat. Hazards Earth Syst. Sci.* 13 (2013) 2707–2716, <https://doi.org/10.5194/nhess-13-2707-2013>.
- 2) M.F. Ballesteros, S.N. Domingo, *Building Philippine SMEs Resilience to Natural Disasters*, Philippine Institute for Development Studies, 2015. Discussion Paper Series no. 2015-20, <http://dirp3.pids.gov.ph/webportal/CDN/PUBLICATIONS/pidsdps1520.pdf>.
- 3) C.M. Bishop, Variational principal components, *Proceedings of the Ninth International Conference on Artificial Neural Networks (ICANN'99)* IEE 1 (1999) 509–514, <https://doi.org/10.1049/cp:19991160>.
- 4) C Calonzo, LGUs Leave Disaster Funds Unused – COA, *GMA News Online*, 2015. <https://www.gmanetwork.com/news/money/personalfinance/490766/lgus-leave-disaster-funds-unused-coa/story/>. (Accessed 23 January 2020).
- 5) O.D. Cardona, A system of indicators for disaster risk management in the Americas, in: J. Birkmann (Ed.), *Measuring Vulnerability to Natural Hazards—Towards Disaster Resilient Societies*, United Nations University Press, Tokyo, 2006, pp. 189–209.
- 6) R.B. Cattell, The meaning and strategic use of factor Analysis, in: J.R. Nesselroade,
- 7) R.B. Cattell (Eds.), *Handbook of Multivariate EXperimental Psychology, Perspectives on Individual Differences*, Springer, Boston, MA, 1988, [https://doi.org/10.1007/978-1-4613-0893-5\\_4](https://doi.org/10.1007/978-1-4613-0893-5_4).
- 8) M. Marulanda, O. Cardona, A. Barbat, The economic and social effects of small disasters: revision of the local disaster index and the case study of Colombia, in: H.
- 9) G. Bohle, K. Warner (Eds.), *Mega Cities: Resilience and Social Vulnerability*, Publication Series of UNU-EHS No. 10, United Nations University (EHS), Munich Re Foundation, Bonn, 2008, pp. 110–120. <http://idea.bid.manizales.unal.edu.co/documentos/15MarulandaSmalldisasters.pdf>.
- 10) [S. Oba, M. Sato, I. Takemasa, M. Monden, K. Matsubara, S. Ishii, A Bayesian missing value estimation method for gene expression profile data, *Bioinformatics* 19 (16) (2003) 2088–2096, <https://doi.org/10.1093/bioinformatics/btg287>.
- 11) P.M. Orencio, M. Fujii, A localized disaster-resilience index to assess coastal communities based on an analytic hierarchy process (AHP), *International Journal of Disaster Risk Reduction* 3 (2013) 62–75, <https://doi.org/10.1016/j.ijdr.2012.11.006>.
- 12) K. Pearson, F.R.S, Liii, On lines and planes of closest fit to systems of points in space, *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science* 2 (11) (1901) 559–572, <https://doi.org/10.1080/14786440109462720>.
- 13) M. Pelling, *Natural Disaster and Development in a Globalizing World*, Routledge, London, 2003, <https://doi.org/10.4324/9780203402375>.
- 14) Philippine Statistics Authority (PSA), 2015 Full Year Poverty Statistics, 2015. <https://psa.gov.ph/content/poverty-incidence-among-filipinos-registered-216-2015-psa>. (Accessed 15 December 2018).
- 15) Philippine Statistics Authority (PSA), *Philippine Standard Geographic Code*, 2020. <https://psa.gov.ph/classification/psgc/?q=psgc/municipalities>. (Accessed 15 January 2020).
- 16) J. Roumasset, M.V. Ravago, K. Jandoc, C. Arellano, Beyond GDP: the natural environment, shocks, energy and economic policy, in: R. Clarete, E. Esguerra,

- 17) H. Hill (Eds.), *The Philippine Economy: No Longer the East Asian EXception?*, Institute of Southeast Asian Studies, Singapore, 2018, pp. 231–268. <https://bookshop.iseas.edu.sg/publication/2342>.
- 18) L. Spizman, M.A. Weinstein, A note on utilizing the geometric mean: when, why and how the forensic economist should employ the geometric mean, *J. Leg. Econ.* 15 (1) (2008) 43–55. [https://www.questia.com/library/journal/1P3-159114199\\_1/a-note-on-utilizing-the-geometric-mean-when-why](https://www.questia.com/library/journal/1P3-159114199_1/a-note-on-utilizing-the-geometric-mean-when-why).
- 19) M. Tipping, C.M. Bishop, Probabilistic principal component analysis, *J. Roy. Stat. Soc. B* 61 (3) (1999) 611–622. <https://www.jstor.org/stable/2680726>.
- 20) United Nations Development Programme (Undp), *Reducing Disaster Risk: A Challenge for Development. A Global Report*, UNDP, Geneva, 2004. <https://www.undp.org/content/undp/en/home/librarypage/crisis-prevention-and-recovery/reducing-disaster-risk-a-challenge-for-development.html>. (Accessed 20 January 2019).
- 21) United Nations Office for Disaster Risk Reduction (UNISDR), *Disaster Resilience Scorecard for Cities*, 2017. <https://www.unisdr.org/we/inform/publications/53349>. (Accessed 23 April 2019).
- 22) S. Wold, K. Esbensen, P. Geladi, Principal component analysis, *Chemometr. Intell. Lab. Syst.* 2 (1987) 37–52, [https://doi.org/10.1016/0169-7439\(87\)80084-9](https://doi.org/10.1016/0169-7439(87)80084-9).
- 23) K.D.S. Yu, R.R. Tan, K.B. Aviso, M.A. B Promentilla, J.R. Santos, A vulnerability index for post-disaster key sector prioritization, *Econ. Syst. Res.* 26 (1) (2014) 81–97, <https://doi.org/10.1080/09535314.2013.872603>.
- 24) Japan International Cooperation Agency, *Report on Koslanda Landslide: Aerial, Field Survey and after Action Review*, 2014.
- 25) Ministry of National Policies & Economic Affairs, & Ministry of Disaster Management, *Sri Lanka rapid post disaster needs assessment floods and landslides*, in: *Integrated Risk Assessment*, 2017.
- 26) United Nations Office for Disaster Risk Reduction, *Disaster Risk Reduction in Sri Lanka Overview: Status Report 2019*, 2019. Retrieved from, [https://www.unisdr.org/files/68230\\_10srilankadrmstatusreport.pdf](https://www.unisdr.org/files/68230_10srilankadrmstatusreport.pdf).
- 27) S. Resetar, L. Ecola, R. Liang, D. Adamson, C. Forinash, L. Shoup, B. Leopold,
- 28) Z. Zabel, *Guidebook for Multi-Agency Collaboration for Sustainability and Resilience*, 2020.
- 29) E. Bardach, *Getting Agencies to Work Together: the Practice and Theory of Managerial Craftsmanship*, Brookings Institution Press, Virginia, 1998.
- 30) M. McGuire, C. Silvia, The effect of problem severity, managerial and organizational capacity, and agency structure on intergovernmental collaboration: evidence from local emergency management, *Publ. Adm. Rev.* 70 (2) (2010) 279–288.
- 31) J.J. Kiefer, R.S. Montjoy, Incrementalism before the storm: network performance for the evacuation of new orleans, *Publ. Adm. Rev.* 66 (2006) 122–130.