

# INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY: APPLIED BUSINESS AND EDUCATION RESEARCH

2022, Vol. 3, No. 9, 1683 – 1692

<http://dx.doi.org/10.11594/ijmaber.03.09.09>

## Research Article

### Resiliency Among Various Businesses in the Philippines in the Context of Post-Disaster Recovery Framework

Anesito L. Cutillas<sup>1\*</sup>, Rosalyn P. Alburo<sup>2</sup>, Hermes M. Alburo<sup>3</sup>, Pet Roey L. Pascual<sup>4</sup>

<sup>1</sup>Graduate School, Cebu Technological University-Argao, Cebu, 6021, Philippines

<sup>2</sup>BENRC and College of Arts and Sciences, CTU-Argao, Cebu, 6021, Philippines

<sup>3</sup>BENRC and College of Forestry and Environment, CTU-Argao, Cebu, 6021, Philippines

<sup>4</sup>College of Agriculture, Cebu Technological University-Barili, Cebu, 6036, Philippines

#### Article history:

Submission September 2022

Revised September 2022

Accepted September 2022

#### \*Corresponding author:

E-mail:

[anesito.cutillas@ctu.edu.ph](mailto:anesito.cutillas@ctu.edu.ph)

#### ABSTRACT

This research highlights the aspects of resiliency among business establishments in the Visayas regions that were directly affected by super typhoon Yolanda in 2013. This study employs a descriptive method to characterize resiliency factors among various businesses. A survey questionnaire was utilized to gather relevant data from the 106 business proprietors and managers. Multivariate analysis via exploratory factor analysis (EFA) was used to determine the underlying factors. In the context of the post-disaster recovery of businesses in the Visayas regions, the exploratory analysis yielded five dimensions. Based on the finding, five causal factors are significant in developing a post-disaster resiliency and recovery framework among various business types. Any business is considered resilient against any form of disaster if it has complete control of its institutional affairs and plans ahead guided by its philosophy. Futuristic planning is also necessary as it imbibes in its operational philosophy the value of foresight. Besides, every business needs to strengthen its linkages outside its operations. Hence, a resilient business considers the value of information exchange and dissemination. Thus, a business is said to be sustainable if it maintains a sound and working framework to improve an adaptive capacity for any calamity or disaster.

**Keywords:** *business, exploratory factor analysis, Philippines, post-disaster recovery, resilience*

#### Introduction

Business organizations play vital roles in maintaining public health and well-being as

key community stakeholders (Pyke et al., 2016). These organizations address issues and sustainability principles in their organizational

#### How to cite:

Cutillas, A. L., Alburo, R. P., Alburo, H. M., & Pascual, P. R. L (2022). Resiliency Among Various Businesses in the Philippines in the Context of Post-Disaster Recovery Framework. *International Journal of Multidisciplinary: Applied Business and Education Research*. 3 (9), 1683 – 1692. doi: 10.11594/ijmaber.03.09.09

business strategy, as failure to do so could result in a loss of competitive advantage and business opportunities, which as a result, will destabilize the long-term performance of the organization (Bocken & Geradts, 2020). Kim (2020) speaks of organizational resilience contributing to business performance during a crisis. According to Vogus & Sutcliffe (2007), business sectors are likely required to adapt and be highly reliable. With the occurrences of disasters like Typhoon Lawin in 2016, Super Typhoon Yolanda, and the 7.2 earthquakes in 2013, for example, Micro, Small, Medium Enterprises (MSMEs) need to be prepared and be resilient.

Nevertheless, various MSMEs in developing countries like the Philippines are non-compliant with the industry's requirements. This scenario limits their capacity to adapt and address risks brought about by a disaster (Pelling et al., 2015). On these notes, Fiksel (2003) discussed the resilience approach and noted that business organizations must constantly monitor their units in terms of strict compliance with industry requirements. Additionally, Fiksel (2003) advised that businesses must ensure operational viability to forecast their resiliency in times of calamity. Several studies have been conducted in some areas that assess disaster preparedness. However, only a few studies have characterized business resiliency in the context of the post-disaster recovery framework in the Visayas regions. This study sought to determine the dimensions of resiliency among various business establishments in the Visayas regions to develop a post-disaster business resilience and recovery framework.

## Methods

This study investigated the factors and dimensions of resiliency among business establishments in the post-disaster recovery framework. Qualitative and quantitative approaches are utilized. On the one hand, Paton (2007) opined that qualitative methods are used to examine the why and how of decision making. On the other hand, quantitative research is characterized, among other things, by deductive reasoning, objectivity, and the use of a structured

instrument and statistical data analysis procedures (Watson, 2015; Boin & McConnell, 2007). This study also used the descriptive method to explain the business resilience attributes and multivariate analysis via exploratory factor analysis to determine the underlying structures. This study utilized an adopted survey questionnaire from Campus (2016) to gather the necessary data from the managers, proprietors, and owners of various business establishments. The instrument has two parts in which the first inquires the business profile, while the second part the questions to be rated by the respondents. Somers (2009) opined that a score of .70 must be attained for an instrument to be highly reliable. A 7-point Likert attitudinal scale was used for the questionnaire since a 7-point Likert scaling is more accurate, easier to use, and better indicates the reflection of the respondent's proper evaluation than other scales (Somers, 2009). The respondents of the study were determined using a stratified random sampling technique. In this study, 106 respondents were utilized from Cebu (Camotes and Bantayan Islands), Leyte (Tacloban, Tan-Awan, and Abuyog), and Samar (Santa Rita) places in the Visayas regions that were most devastated by the super typhoon, Yolanda.

Descriptive statistics were also employed to show the profile of the respondent business establishments. A weighted mean was used for the truancy of the statements that describe business resiliency. In order to identify the relevant factor characterizing business resiliency, data reduction via exploratory analysis (EFA) was then utilized. According to Corner (2009), EFA explains variables and the content or meaning of factors. To attain the dimensionality of constructs, principal component factor analysis was used (Mooi et al., 2018). This study also employed VARIMAX rotation as coefficients less than +0.50 are repressed using this statistical treatment (Osborne, 2015).

In order to test the factorability of business resilience, KMO measure and Bartlett's test, as well as the Latent root criterion, were used. Moreover, Catell's scree plot and principal component analysis were also utilized.

## Results and Discussion

### Profile of the Businesses in the Visayas Regions

The profile of the businesses is presented through a pie chart to illustrate its various characteristics.

**Nature of Business.** As observed in Figure 1, 20% of the businesses are in accommodation and food services, while the other 20% include businesses in agriculture. Besides, wholesale, retail trade and repair of vehicles consist of (16%), hardware and furniture stores (7%), professional and technical services (2%), merchandise and grocery distribution (2%), arts, entertainment, and recreation (2%), education (1%), while is construction (1%). Moreover, others that consisted of 21% refer to various businesses like plant businesses, small food supply chains, and small stores in the dry and wet markets.

retail trade and repair of vehicles consist of (16%), hardware and furniture stores (7%), professional and technical services (2%), merchandise and grocery distribution (2%), arts, entertainment, and recreation (2%), education (1%), while is construction (1%). Moreover, others that consisted of 21% refer to various businesses like plant businesses, small food supply chains, and small stores in the dry and wet markets.

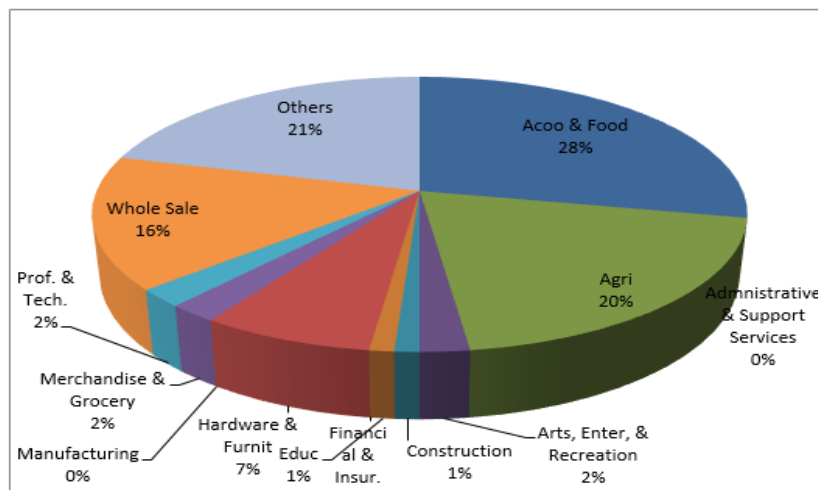


Figure 1: Distribution of Respondents in terms of Nature of Business

The distribution of respondents in terms of nature of business means that businesses in the Visayas regions, especially in Cebu (Camotes and Bantayan Islands), Leyte (Tacloban and Tan-Awan and Abuyog), and Samar (Santa Rita and Basey) are distributed diversely. This trend implies that the chosen areas are business commerce and trade centers due to

various business establishments with various products and services.

**Ownership Type.** As observed in Figure 2, most of the businesses belong to a sole proprietorship (92.45%), while others are cooperatives (5.66%) and corporations (1.89%), while others are partnerships (0.94%). This fact implied that various businesses are owned by a single person only as to ownership type.

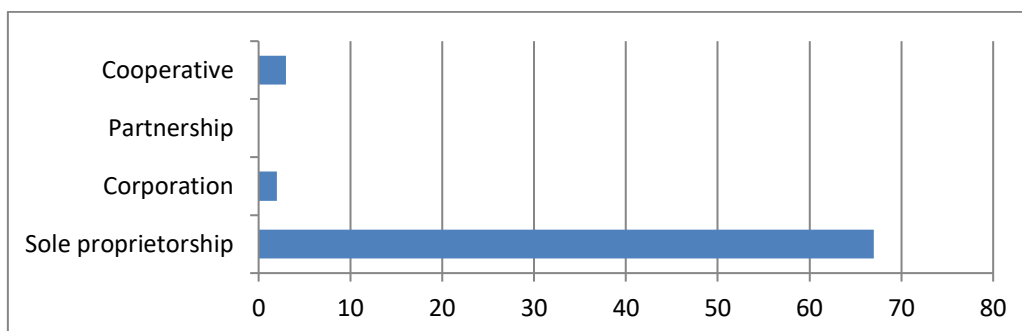


Figure 2. Distribution of Respondents in Terms of Ownership Type

**Years in Operations.** During the conduct of the study, it was found that **44.34%** have been in business for eleven years and above, while **28.30%** were those which have been in business for one to five years; **22.64%** have been around for six to ten years (22.64%), and those which have just started into business for zero to months (4.72%). This observation implies that businesses in the Visayas regions are still predominantly in their initial and acceptance operations phase.

**Establishment Type.** As to this sort, 85.85% of the respondents were classified under cottage industry with less than Php 3 million as their total assets. This was followed by 8.49% sorted as micro-businesses with total assets of not more than Php 3 million. Medium enterprises with more than Php15-100 million assets constitute 2.83%. While small businesses with total assets of more than Php 3 million to Php 15 million comprise 2.83%. However, none or 0% were categorized as large businesses with total assets above Php 100 million. The predominant existence of medium enterprises by sole proprietorship denotes that business inheritance is critical to ensuring that the next generation can manage the business

and family members can benefit from the earnings and revenues Hamdam et al. (2022).

**The Attributes of Business Resilience**

This study constructed a more precise structure for the factors' content validity through VARIMAX. The factor analysis coefficient is set at +0.50, which is higher than the acceptable limits value of +0.40. Using the VARIMAX method, all the factors had significant coefficient values. There were six-factor attributes loaded on the 50 items. However, the sixth factor was composed of merely isolated items, so it was eliminated from the analysis. Below are the five-factor attributes of business resiliency.

**Factor 1 – Institutional Control.** As seen in Table 1, the coefficient pattern ranges from 0.464 to 0.785 extracted from the 16 items. As observed, the value surpasses the minimum requirement of +0.50. A closer look at the commonality of the 16 items, the attribute structure for "institutional control" is observed. Institutional control speaks about business management and preparedness even before the onset of a calamity (Veenema, 2018).

Table 1. Constructs and Loadings under the First Attribute of Business Resilience in the Context of Post-Disaster Recovery

Factor	Item	Construct	Factor Loading
Institutional Control	Item_41	Conducts disaster preparedness and drills for earthquakes, fires, and typhoons	.785
	Item_37	Discuss business preparedness among the owners and their consultants.	.735
	Item_23	Generates fund sources to revitalize business operations	.699
	Item_40	Invests in training its personnel for risky situations	.687
	Item_39	Secures building insurances and does an inventory of the products from a possible earthquake, fire, or force majeure	.677
	Item_42	Formulate post-disaster plans	.626
	Item_43	Upholds authority to control anything to happen in the business	.622
	Item_28	Sustains business with enough workers	.600
	Item_24	Instills in the employees' minds a sense of cooperation in rebuilding the business.	.619
	Item_27	Do post-disaster damages after a calamity hit the business	.600

Factor	Item	Construct	Factor Loading
	Item_25	Adapts well to differing conditions	.589
	Item_22	Secures stock of supplies and materials that can be used in times of emergencies	.582
	Item_34	Maintains a disaster and risk mitigation officer	.488
	Item_48	Keeps a resource manual for risk reduction and management	.477
	Item_30	Stores a contact list of all personnel.	.472
	Item_29	Takes business risk management to a new level	.464

This finding agrees with the results of Covington & Simpson (2006) which provides a general overview of disaster preparedness works of literature, focusing mainly on the role of disaster preparedness for communities and organizations. Disaster risk reduction means reducing disaster-related risks through a systematic effort. Hence, Mall et al. (2019) argued that improved preparedness, reduction in individual exposure, reduced damage to property, proper management of land, and enhanced population resilience are the core objectives of every business firm. Moreover, Mizutori, (2020) observed that most countries have started reporting on the number of persons dead and missing attributed to disasters. However, fewer countries, especially the developing ones, have reported on disaster-related economic and infrastructure losses, reflecting the difficulty of gathering data around these targets.

**Factor 2 - Planning for Preparedness.** As evident in Table 2, factor number 2 is extracted from the 12 items whose item pattern

coefficients ranged from 0.485 to 0.940. The item, "Ensures that transport vehicle is prepared at all times in case disaster sets in," was lowest in pattern coefficient value of 0.485. Meanwhile, the item "Ensures that transport vehicle is prepared at all times in case disaster sets in" had the highest pattern coefficient value of 0.940. As observed, the pattern coefficient of 0.940 exceeds the minimum that is +0.50. When analyzed, the nature of the items is attributed to "planning and preparedness." This factor structure speaks of business planning that ensures business continuity, financial preparations, safety plans, and assessments for imminent disasters.

This finding is a corollary to the pronouncements of Cowan and Simpson (2011) who argued that in preparing the business for impending disasters, it should first and foremost consider the soundness of the preparations. On a similar note, Shaw (2020) spoke of business accountability for disaster-related human and economic losses and a specific responsibility that is primary risk reduction requirements.

Table 2. Constructs and Loadings under the Second Attribute of Business Resilience in the Context of Post-Disaster Recovery

Factor	Item	Construct	Factor Loading
Planning and Preparedness	Item_20	Has a business continuity plan	.940
	Item_31	Plans to address governance and compliance issues	.754
	Item_36	Have risk and vulnerability assessments	.739
	Item_38	Can improvise when usual resources are not available	.734
	Item_46	Instigates studies relative to disaster risk reduction and management	.723
	Item_45	Guarantees that readiness is maintained at all times	.648
	Item_18	Has a safety plan	.620
	Item_26	Promotes a sound financial management plan	.620
	Item_35	Ensures that all personnel has insurance for future claims	.592

Factor	Item	Construct	Factor Loading
	Item_19	Does a pre-disaster assessment on the extent of damages that will hit the business	.533
	Item_32	Maintains a long-term plan to strengthen the business	.521
	Item_47	Prepares a transport vehicle in case disaster sets in	.485

**Factor 3 – Philosophy and Integrity.** As shown in Table 3, Factor 3 is extracted from the nine items whose pattern coefficient range from 0.517 to 0.680. The item "Understands that risks are existing" had the lowest value of pattern coefficient, which was 0.517, while "Compensates the efforts of volunteers to rebuild the business" had the highest value of

pattern coefficient, which was 0.680. As shown, the item's coefficient values exceed the minimum requirement of +0.50. The nine items below describe any business's preparation and practices in terms of its corporate philosophy. Hence, this attribute is labeled as "Philosophy and Integrity".

Table 3. Constructs and Loadings under the Third Attribute of Business Resilience

Factor	Item	Construct	Factor Loading
Philosophy and Integrity	Item_12	Offsets the labors of volunteers to rebuild the business	.680
	Item_14	Shows eagerness of external forces in its vision and or mission statement	.642
	Item_4	Promotes a corporate philosophy of taking care of the other before self-interest	.637
	Item_15	Must be confident in its future activities	.631
	Item_21	Underscores a culture of putting in the best effort in the business	.624
	Item_6	Maintains the philosophy of "business as usual"	.593
	Item_10	Display compassion to others who are victims of calamities	.584
	Item_13	Embed responsibility for business continuity throughout the organization	.561
	Item_17	Understands that risks are existing	.517

As observed, the nine items expressed business realizations, preparedness, and resilience in their corporate philosophy. This finding conformed with the Chopra et al. (2014), which stated that business management would always aim at reducing risks and put in place an efficient emergency response system capable of large-scale handling disasters.

**Factor 4 – External Support and Linkages.** As seen in Table 4, Factor 4 is extracted from the eight items whose pattern coefficient ranged from 0.434 to .742. The item "Develops

strong relationships with suppliers" had the lowest value of pattern coefficient, which is 0.434. In contrast, "Participates in talks or discussions about climate change or any environmental issue" had the highest pattern coefficient value, which is .742. Again, the item's coefficient value exceeds the minimum requirement of +0.50. The items declare the capacity of business establishments to search for external support from the community and government in times of calamity, which is labeled "External Support and Linkages."

Table 4. Constructs and Loadings under the Fourth Attribute of Business Resilience in the Context of Post-Disaster Recovery

Factor	Item	Construct	Factor Loading
External Support and Linkages	Item_8	Contributes in the discussions about climate change or any environmental issue	.742
	Item_49	Has a strong relationship with its customers/clients	.707
	Item_2	Works with local planners, emergency managers, and public works officials to prepare for instances of damages	.648
	Item_7	Links with other businesses in working together to reestablish what was left of their company	.632
	Item_1	Solicits expert assistance concerning disaster preparations in times of need	.604
	Item_50	Maintains contacts with government agencies and NGOs	.543
	Item_11	Seeks support from the local community	.449
	Item_9	Establishes a strong relationships with suppliers	.434

This finding is in line with McEntire (2021). He declared that for a business establishment to attain faster recovery in their operations when struck by any disaster, strong coordination with agencies involved in disaster management must be ensured. Moreover, business owners and managers must maintain a more proactive role to ensure more participatory management. More significant management would be prerequisite at both national and international levels in addressing issues like climate change and top environmental issues. In the same way, Boin & Bynander (2015) reported that lack of coordination among the agencies and local government units most

likely hinders immediate response during emergencies.

**Factor 5 – Communication and Media.** Another attribute of business resilience in the context of post-disaster recovery is communication and media (Sadri et al. (2018). As reflected in Table 5, Factor 5 is extricated from five items whose pattern coefficient ranged from 0.502 to 0.755. The item "Utilizes social media as a tool to disseminate information regarding risks" had the lowest value of pattern coefficient, which is 0.502, while "Formulates quick decision-making protocols in times of disasters" had the highest value of pattern coefficient 0.755. As noticed, the minimum requirement of +0.50 is exceeded.

Table 5. Constructs and Loadings under the Fifth Attribute of Business Resilience

Factor	Item	Construct	Factor Loading
Communication and Media	Item_44	Frames speedy decision-making protocols in times of disasters	.755
	Item_33	Handles the communication channels of the organization effectively	.675
	Item_5	Use in observing and considering the extent of the damage of the disaster	.645
	Item_16	Obtain current information regarding impending disasters from the Internet	.628
	Item_3	Employs social media as a tool to broadcast information regarding risks	.502

As shown, the five items emphasized media and technology's role in providing needed information about the upcoming disaster. This finding parallels the pronouncements of Son (2019). They elucidated that updates must be broadcasted speedily to people affected by the calamity and the responders in a disaster situation. In the words of Tanner et al. (2015), business organizations should establish relationships with other credible sources like the media and various stakeholders, even before a crisis or disaster occurs. Hence, as a communicator with the public, the media should be viewed as a resource throughout a crisis (Mobo, 2020; Guo et al., 2021).

**Proposed Business Resiliency Framework**

As reflected in Figure 3, the EFA generated five scopes where businesses in the Visayas regions are said to be resilient. The five factors are institutional control, planning and preparedness, philosophy and integrity, external support and linkages, and communication and media. A business is said to have institutional con-

trol if it regularly conducts disaster preparedness and drills for earthquakes, fires, and typhoons. This can also be attained when a business industry has a consultant that would likely discuss business preparedness between and among other business owners. Meanwhile, a business is said to be resilient if it maintains sound planning and preparations. This is manifested in the business continuity plan, which includes plans to address governance and compliance issues. Moreover, a business is regarded as a resilient one if it anchors on good philosophy and integrity. It can be seen by the business' eagerness for external forces in its vision and or mission statement. Hence, any business is said to be resilient if it has external solid support and linkages. This is manifested in the business' strong relationship with its customers or clients. And finally, a business is considered resilient if it maximizes communication and media use. A particular industry is resilient if it frames speedy decision-making protocols in times of disasters and effectively handles the organization's communication channels.



Figure 3. Developed Business Resilience Framework Showing the Five Derived Attributes

The abovementioned five factors embody a pragmatic business resilience model that would contribute positively to businesses in their fight against any disaster. To progress and reinforce the adaptive capacity of the

industries, these five factors are recommended to be considered seriously for the business to be resilient in times of calamity. In a similar vein, Cutillas et al. (2018) suggest that sound coping strategies must also be maintained for



any business to manage immediately after the onslaught of a disaster. In this sense, this resiliency model is considered seriously to withstand any calamity or a disaster that would come along the way as its coping strategies as well.

## Conclusion

The study concludes that business resilience is multidimensional based on the study's findings. A business is said to be resilient in times of calamity if it has control of its institutional affairs, is well-planned and prepared, has philosophy and integrity, external support and linkages, and is well-equipped with technology for internal and external communication purposes. These are the five factors that any business may give strong attention to if one aspires to be resilient against incoming disasters brought by the external environment. Hence, a business may maintain a sound and working framework to improve its adaptive capacity towards disasters.

## Acknowledgement

The authors thank the Cebu Technological University, which funded the study.

## References

- Bocken, N. M., & Geradts, T. H. (2020). Barriers and drivers to sustainable business model innovation: Organization design and dynamic capabilities. *Long Range Planning*, 53(4), 101950.
- Boin, A., & Bynander, F. (2015). Explaining success and failure in crisis coordination. *Geografiska Annaler: Series A, Physical Geography*, 97(1), 123-135.
- Campos, Karl P. (2016). Dimensions of Business Resilience in Davao City, USP: GMP Press and Printing ISSN: 2304-1013, Rev. Integr. Bus. Econ. Res. Vol 5(1): 168-198.
- Chopra, S., & Sodhi, M. (2014). Reducing the risk of supply chain disruptions. *MIT Sloan management review*, 55(3), 72-80.
- Corner, S. (2009). Choosing the right type of rotation in PCA and EFA. *JALT testing & evaluation SIG newsletter*, 13(3), 20-25.
- Covington, J., & Simpson, D. M. (2006). An overview of disaster preparedness literature: Building blocks for an applied Bay Area template. *Center for Hazards Research and Policy Development. Working Paper*, 06-02.
- Cowan, H. & Simpson, I. (2011). Planning for disasters and responding to unforeseen complexity: the first large test for the New Zealand Earthquake Commission, 12th Hazards Conference, 29 September – 1 October, Surfers Paradise, Qld.
- Cutillas, A. L., Albuero, R. P., Albuero, H. M., & Pascual, P. R. L. (2018). Coping Strategies of Communities Affected by the Bohol Earthquake. *Journal of Agriculture and Technology Management*.
- Fiksel, J. 2003. Designing resilient, sustainable systems. *Environmental Science and Technology* 37(23): 5330–5339.
- Guo, J., Liu, N., Wu, Y., & Zhang, C. (2021). Why do citizens participate on government social media accounts during crises? A civic voluntarism perspective. *Information & Management*, 58(1), 103286.
- Hamdan, A., Nor Muhamad, N. H., Kamarudin, M. K., Abdul, B., Ab Rahim, N. M. Z., & mohamad norzilan, n. I. (2022). Sole Proprietorship Business Succession in Malaysia: A Perspective of Civil and Islamic Law. *The Journal of Asian Finance, Economics and Business*, 9(3), 285-293.
- Hill, B. D. (2011). *The sequential Kaiser-Meyer-Olkin procedure as an alternative for determining the number of factors in common-factor analysis: A Monte Carlo simulation*. Oklahoma State University.
- Kim, Y. (2020). Organizational resilience and employee work-role performance after a crisis situation: exploring the effects of organizational resilience on internal crisis communication. *Journal of Public Relations Research*, 32(1-2), 47-75.
- Mall, R. K., Srivastava, R. K., Banerjee, T., Mishra, O. P., Bhatt, D., & Sonkar, G. (2019). Disaster risk reduction including climate change adaptation over south Asia: challenges and ways forward. *International Journal of Disaster Risk Science*, 10(1), 14-27.
- McEntire, D. A. (2021). *Disaster response and recovery: strategies and tactics for resilience*. John Wiley & Sons.
- Mizutori, M. (2020). Reflections on the Sendai Framework for disaster risk reduction: Five years since its adoption. *International Journal of Disaster Risk Science*, 11(2), 147-151.
- Mobo, D. (2020). Using learning management systems in an Internet of Things (IOT) smartphone device amidst COVID-19 crisis. *Computer Law Review and Technology Journal, Forthcoming, American Research Journal of Computer Science and Information Technology*, 4(1), 1-3.

- Mooi, E., Sarstedt, M., & Mooi-Reci, I. (2018). Principal component and factor analysis. In *Market research* (pp. 265-311). Springer, Singapore.
- Osborne, J. W. (2015). What is rotating in exploratory factor analysis?. *Practical Assessment, Research, and Evaluation, 20*(1), 2.
- Paton, D. (2007). Measuring and monitoring resilience in Auckland (Vol. 2007). GNS Science.
- Pelling, M., O'Brien, K., & Matyas, D. (2015). Adaptation and transformation. *Climatic Change, 133*(1), 113-127.
- Pyke, S., Hartwell, H., Blake, A., & Hemingway, A. (2016). Exploring well-being as a tourism product resource. *Tourism Management, 55*, 94-105.
- Sadri, A. M., Ukkusuri, S. V., Lee, S., Clawson, R., Aldrich, D., Nelson, M. S., ... & Kelly, D. (2018). The role of social capital, personal networks, and emergency responders in post-disaster recovery and resilience: a study of rural communities in Indiana. *Natural hazards, 90*(3), 1377-1406.
- Shaw, R. (2020). Thirty years of science, technology, and academia in disaster risk reduction and emerging responsibilities. *International Journal of Disaster Risk Science, 11*(4), 414-425.
- Somers, S. (2009). Measuring resilience potential: an adaptive strategy for organizational crisis planning. *Journal of Contingencies and Crisis Management, 17*(1), 12-23.
- Son, J., Lee, H. K., Jin, S., & Lee, J. (2019). Content features of tweets for effective communication during disasters: A media synchronicity theory perspective. *International Journal of Information Management, 45*, 56-68.
- Tanner, T., Lewis, D., Wrathall, D., Bronen, R., Craddock-Henry, N., Huq, S., ... & Thomalla, F. (2015). Livelihood resilience in the face of climate change. *Nature Climate Change, 5*(1), 23-26.
- Veenema, T. G. (Ed.). (2018). *Disaster nursing and emergency preparedness*. Springer Publishing Company.
- Vogus, T. J., & Sutcliffe, K. M. (2007, October). Organizational resilience: towards a theory and research agenda. In *Systems, Man and Cybernetics, 2007.ISIC. IEEE International Conference on* (pp. 3418-3422). IEEE.
- Watson, R. (2015). Quantitative research. *Nursing Standard (2014+), 29*(31), 44.