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

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ABSTRACT

This research highlights the aspects of resiliency among businesses 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...
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 prole, 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 (Tadoban, 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 resiliency, 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.

![Figure 1: Distribution of Respondents in terms of Nature of Business](image)

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](image)
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 resilience.

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).

| Factor | Item | Construct | Factor Loading |
|--------|------|-----------|----------------|
| 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 |
This finding agrees with the results of Cov-ington & Simpson (2006) which provides a gen-
eral overview of disaster preparedness works
of literature, focusing mainly on the role of dis-
aster preparedness for communities and or-
ganizations. Disaster risk reduction means re-
ducing disaster-related risks through a system-
etic 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. How-
ever, fewer countries, especially the developing
countries, 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 pre-
pared 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 coeffi-
cient 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 plan-
ning that ensures business continuity, financial
preparations, safety plans, and assessments for
imminent disasters.

This finding is a corollary to the pronounce-
ments of Cowan and Simpson (2011) who ar-
gued that in preparing the business for impend-
ing disasters, it should first and foremost con-
sider the soundness of the preparations. On a
similar note, Shaw (2020) spoke of busines
accountability for disaster-related human and
economic losses and a specific responsibility
that is primary risk reduction requirements.

| 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 |

*Table 2. Constructs and Loadings under the Second Attribute of Business Resilience in the Context of Post-Disaster Recovery*
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           |
| Philosophy and Integrity| Item_14     | Shows eagerness of external forces in its vision and or mission statement | .642           |
| Philosophy and Integrity| Item_4      | Promotes a corporate philosophy of taking care of the other before self-interest | .637           |
| Philosophy and Integrity| Item_15     | Must be confident in its future activities     | .631           |
| Philosophy and Integrity| Item_21     | Underscores a culture of putting in the best effort in the business | .624           |
| Philosophy and Integrity| Item_6      | Maintains the philosophy of “business as usual” | .593           |
| Philosophy and Integrity| Item_10     | Display compassion to others who are victims of calamities | .584           |
| Philosophy and Integrity| Item_13     | Embed responsibility for business continuity throughout the organization | .561           |
| Philosophy and Integrity| 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."
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 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  | .742           |
|                                             | Item_49   | Has a strong relationship with its customers/clients                      | .707           |
|                                             | Item_2    | Works with local planners, emergency managers, and public works officials  | .648           |
|                                             | Item_7    | Links with other businesses in working together to reestablish what was   | .632           |
|                                             | Item_1    | Solicits expert assistance concerning disaster preparations in times of  | .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           |

### 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 control 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 resilience 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.

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