International Journal of East Asian Studies, 23(2) (2019), 2-11.

Lesson Learned From the Great Kanto Earthquake to the Kumamoto Earthquake to Improve Crisis Management Process

Chatree Preedaananthasuk[1]

[1] Faculty of Business, Economics and Communications, Naresuan University

Corresponding Author:
Chatree Preedaananthasuk
Faculty of Business, Economics and Communications,
Naresuan University, Phitsanulok 65000, Thailand
E-mail: pichaiaroon@hotmail.com

Received: 19 March 2019 **Revised:** 5 April 2019 **Accepted:** 10 April 2019

Abstract

Natural Disasters are regarded as crises caused by the act of nature not by human. It is hard to avoid natural disasters, but we can learn from crisis response how to improve crisis management process. Crisis Management process is not complete if we focus only reactive crisis management process. A crisis may recur if an organization unlearns previous crisis experience.

Japan is one of the favorite tourist destinations and is also an earthquake-prone country. Great earthquakes in the past destroyed cities and killed many people in Japan, and it provided lesson learned how to improve crisis response. This study applied case studies of earthquakes in Japan from the Great Kanto Earthquake to the Kumamoto Earthquake to illustrate the Framework of Integrated Crisis Management. Research results emphasized on learning process which is one of important parts of Integrated Crisis Management.

Keywords: integrated crisis management, natural disaster, crisis response, lesson learned, earthquake

INTRODUCTION

Natural Disaster is regarded as a crisis which is caused by the act of nature not by human. A crisis is an unspecified and rare situation but it has a strong impact to disrupt the whole system, because it threatens then it is essential to make a decision and respond to a crisis immediately (Preedaananthasuk, 2005, p.10). Although an earthquake is a kind of natural disaster and it does not frequently occur, it has a strong impact and disrupts the whole system.

Japan is one of favorite tourist destinations (The Telegraph, 2017, January 27) but it sits on fault lines which make it among the most seismically active countries. Great earthquakes in the past destroyed cities and killed many people in Japan. Although it is hard to forecast precisely when an earthquake will occur, we can prepare to cope with the impact of the earthquake. Earthquakes in one country can provide lesson learned for other countries to learn how to improve crisis response and lessen the damage and recover to normalcy as soon as possible.

This study applied case studies of earthquakes in Japan to illustrate the Framework of Integrated Crisis Management. Lessons learned from the Great Kanto Earthquake to the Kumamoto Earthquake can be applied to other countries how to cope with earthquake more efficiently, to lessen damage to properties and loss of life, and learn how to avoid the recurrence of tragedy of earthquake.

LITERATURE REVIEW

Although reactive crisis management is essential process during a crisis to lessen damage and recover to normalcy as soon as possible, crisis management may be incomplete because unlearning crisis experience to improve crisis prevention mechanism and organizational behavior may cause crisis recurrence. Pauchant and Mitroff (1992) proposed the three essential types of crisis management and their five phases to explain the importance of proactive crisis management, reactive crisis management and interactive crisis management. An organization can detect early warning signs before a crisis will occur and initiate prevention mechanism to avoid crisis. Both early warning sign detection phase and prevention phase are in proactive crisis management type. When situation becomes a crisis, an organization must control damage and tries to return normalcy as soon as possible. General crisis management concepts focus on both damage containing phase and recovery phase which are regarded as reactive crisis management. However, lesson learned from crisis experience is also important. An organization which unlearns crisis experience may face crisis recurrence. Lesson learning phase is regarded as interactive crisis management.

THE FRAMEWORK OF INTEGRATED CRISIS MANAGEMENT

Preedaananthasuk (2013, pp. 34-36) proposed the Framework of Integrated Crisis Management to explain relationship among factors which make organizations respond to the same crises differently. An organization detects early warning signs and interprets consequence of those issues to select appropriate alternative to respond to those issues. An organization is likely to initiate prevention mechanism if those issues are substantial and ignore to initiate preventive mechanism if those issues are marginal. Therefore, even if organizations face the same issues, consequences of strategic issue diagnosis vary from one organization to another organization. As a result, they select different alternative to respond to those issues. Hence, strategic issue diagnosis is included in the Framework of Integrated Crisis Management.

Although an organization has prevention mechanism, it is possible that impact of a crisis is beyond existing prevention mechanism to control. Failure to prevent a crisis forces an organization to control the degree of damage and recover to normalcy soon. However, the degrees of damage and recovery time depend on crisis stakeholders, crisis communication and organizational preparedness. Hence, the reactive crisis management in the Framework of Integrated Crisis Management will focus on who are crisis stakeholders, how an organization communicates during a crisis and how well an organization prepares for a crisis response. Because multiple stakeholders get involved during a crisis and mishandling crisis stakeholders may trigger to become an intensified crisis (Preedaanansuk, 2014, p. 152). In addition, selection of appropriate crisis communication tools can contain the damage. On the other hand, miscommunication with multiple stakeholders can make situation worse. Furthermore, organizational preparedness plays a major role to control the damage and recovery time. Lesson learned from crisis experience helps to improve early warning signs detection more quickly and accurately and diagnose strategic issues more precisely to initiate timely appropriate prevention mechanism to avoid a crisis. Although some crises are hard to avoid, lesson learned from crisis experience can help to lessen the degree of damage and recover to normalcy quickly. Therefore, learning is also regarded as one of important parts in the Framework of Integrated Crisis Management.

RESEARCH METHODOLOGY

This study selected the case study approach because there are a small number of samples, but an in-depth analysis, especially the impact of a crisis and crisis management process improvement can help to better understand how crisis management process is developed and also how Japan learned from earthquakes (Krathwohl, 1998; Yin, 2003; Maxwell, 1996).

Purposive sampling was selected for this study because Japan sits on fault lines. Japan is the seismically active country and experienced great earthquakes many times in the past. Therefore, the great earthquakes in Japan are selected to illustrate the Framework of Integrated Crisis Management. Analysis of crisis management for the great earthquakes in Japan can help us to better understand the development of crisis management process.

RESEARCH RESULTS ANALYSIS

Japan is located in a volcanic zone on the Pacific Ring of Fire and sits on fault line and is prone to frequent earthquakes and volcanic eruptions (Pailin, 2016, August 27). This study selected the Great Kanto Earthquake, the Great Hanshin Earthquake, the Great Tohoku Earthquake and the 2016 Kumamoto Earthquake to illustrate the Framework of Integrated Crisis Management because these great earthquakes shed light on crisis management process development.

The Great Kanto Earthquake

The great earthquake occurred on September 1, 1923, had an epicenter deep beneath Izu Oshima Island. It had a magnitude estimated at 8.3. Because the earthquake hit Tokyo and Kanagawa Prefecture especially Yokohama areas which are in Kanto Region, then it is called the Great Kanto Earthquake. After the quake, it was followed by a 40-foot-high tsunami and fires from the overturned cooking stoves in many homes along with strong winds devastated many areas and burned many people to death (Hammer, May 2011).

At the time, there was not effective early warning signs detection tool. The Japanese Government and people in Japan had not a concrete plan to respond the earthquake. (Hammer, May 2011) The Great Kanto Earthquake killed around 140,000 people (Stanford News Service, 1996, January 10). Moreover, a false rumor was spread that Koreans took advantage of the earthquake to commit arson and robbery. As a result, Anti-Korean sentiment triggered the tragedy of mass murder of Koreans (Hammer, May 2011). This incident pointed out the weak point of communication channel during a crisis. It is important to obtain and provide accurate information during a crisis because there are multiple stakeholders to get involved and people are likely to panic during the earthquake, without reliable information source, people are prone to be misled by rumors.

After the Great Kanto Earthquake, a reconstruction plan of Tokyo with modern networks of roads, trains and public services was implemented. Lesson learned from the Great Kanto Earthquake pointed out the weak point of preparation. In 1960, September 1 is designated as Disaster Prevention day to commemorate the earthquake and remind people of the importance of preparation, and school, public and private organizations host disaster drills. Without disaster drills, people are likely to be panic when the earthquake hit because they do not have any guideline how to respond crisis. As a result, situation becomes worse.

The Great Hanshin Earthquake

After the Great Kanto Earthquake, there were many earthquakes in Japan but the Great Hanshin Earthquake is regarded as one of major great disasters in Japan because it killed thousands of people. The Great Hanshin Earthquake occurred on January 17, 1995 with a magnitude at 7.3. The epicenter was to the north of the island of Awaji, and south of Kobe City, Hyogo Prefecture. The quake devastated many areas in Kobe, numerous elevated roads,

rail bridges, buildings collapse, and the estimated casualties totaled over 5,000 (National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 1995, October 14).

The government was criticized for acting slowly, showing poor leadership, and bureaucratic negligence, this led to delays in the mobilization of critical resources and hence the number of deaths increased (Leng, 2015). Evidences of the Great Hanshin Earthquake emphasized that poor crisis preparedness had relationship with the worse degree of damage and longer recovery time. At the time, there was not integrated disaster management information system, information was not shared among relevant organizations, as a result, delays in decision-making. Although there was not electrical power supply blackout, water supply, gas supply, normal transportation routes were disrupted. Water supply was restored within two weeks and gas utilities were restored within a month (National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 1995, October 14). Because of delays in the government action, the Great Hanshin Earthquake was the turning point in the emergence of volunteerism to take part in civic engagement during a natural disaster.

In the aftermath of the Great Hanshin Earthquake, the government realized the important roles of volunteers, and then loosened of requirements for the establishment of a Central Disaster Management Council led by the Prime Minister and supported disaster management mechanisms of volunteer groups and private organizations (Cabinet office, Government of Japan, March 2015).

More than 80% of the casualties in the Great Hanshin Earthquake were caused by collapse buildings (The Japan Times, 2015, January 16). The quake shed light on the importance of regulation revision. The 1960 steel reinforcement specification regulation was revised because many construction structures collapsed after the quake hit even though those structures were believed to be relatively safe from the earthquake. The Act on Promotion of the Earthquake-proof Retrofit of Building and the Amendment of Disaster Countermeasure Basic Act were enacted. The earthquake provoked Japanese disaster prevention authorities. Japanese Government promoted a fast flow of information and cooperation between national, prefectural, and municipal governments, as well as civil society organizations (Leng, 2015). Japan learned from the quake to reinforce construction structures so that they could resist the great earthquake.

The Great Tohoku Earthquake

On March 11, 2011, the 9.0 magnitude Great Tohoku Earthquake hit the North-Eastern region of Japan followed by a powerful 133-foot-high tsunami in Miyako, Iwate Prefecture. (extremeplanet.me, 2014, February 4).The tsunami caused nuclear accidents at three reactors in the Fukushima Daiichi nuclear power plant complex. Hundreds of thousands of residents nearby nuclear power plant were affected. The Great Tohoku Earthquake and powerful tsunami killed 15,893 people and 2,556 people were reported missing (National Police Agency of Japan, 2016, February 10). The degree and extent of damage by the earthquake and tsunami were enormous, because more than 1.2 million buildings were damaged

from the earthquake, tsunami and associated aftershocks (Vervaeck and Daniell, 2012, March 10). Because nuclear power plants were damaged by the earthquake and tsunami, then the blackouts affected not only the Tohoku region but also the Kanto region. Voluntary electricity reduction was used by consumers in Kanto region to help to reduce the predicted frequency and duration of the blackouts (The Japan Times, 2011, March 17).

The impact of the Great Tohoku Earthquake was serious more than the Great Hanshin Earthquake. Unlike the impact of the Great Hanshin Earthquake focused on Kansai region, the Great Tohoku Earthquake impacted not only Tohoku region but also Kanto region. Moreover, the Great Tohoku Earthquake got involved with powerful tsunami and nuclear accident which impacts were beyond crisis preparedness, especially the damage of nuclear plant during the earthquake.

In fact, there were tsunami warning announcements from Japan Metrological Agency before tsunami reached communities. However, many people could not flee from powerful tsunami. As a result, total number of fatalities was very high.

The Japanese government applied the lessons learned from the Great Hanshin Earthquake to the Great Tohoku Earthquake. Leng (2015) pointed out that the Japanese government changed the policy of disaster management after the Great Hanshin Earthquake to decentralize to the local government and cooperate with volunteer groups and NGOs. As a result, response time to the Great Tohoku Earthquake for post-crisis relief was faster than the Great Hanshin Earthquake.

Lessons learned from the Great Tohoku Earthquake led the Japanese Government to introduce Amendment of Disaster Countermeasures Basic Act to improve rapid wide-area response for large-scale disaster, smooth and safe evacuation of resident, Amendment of the Act on Promotion of the Earthquake-proof Retrofit of Building, and The Act for Establishment of the Nuclear Regulation Authority (Cabinet Office, Government of Japan, March 2015).

The Kumamoto Earthquake

The Kumamoto earthquake occurred on April 14, 2016 with a magnitude 6.2 followed by the main shock of magnitude 7.0 on April 16, 2016. The earthquake hit many areas in Kumamoto City, Mashiki Town, and Aso City on Kyushu Island. The two earthquakes caused around 50 deaths and around 3,000 people were injured. More than 44,000 people were evacuated from their homes. Although the number of deaths for the quake is lower than the Great Earthquakes which are mentioned above, it showed that the Mashiki elementary school was not affected by the earthquake whereas other buildings and houses nearby were seriously damaged. According to Epstein et al. (2016, April 29), an old school near Ishinomaki area in Tohoku region was strengthened, and it was barely damaged after it was shaken by the 2011 Tohoku earthquake with a 9 magnitude, and later hit by tsunami. The Central Disaster Management Council drafted the Urgent Countermeasures Guidelines for promoting the Earthquake-resistant Construction of Houses and Buildings in 2005, and the goal for public schools for both elementary level and junior-high school level was 100% of

schools having adequate earthquake-resistant construction (Cabinet Office, Government of Japan, March 2015). Therefore, regulatory enforcement is likely to have relationship with effective crisis prevention mechanism.

DISCUSSIONS AND CONCLUSIONS

This study applied the Framework of Crisis Management to explain crisis management process development in Japan for case studies of the great earthquakes. From the Great Kanto Earthquake in 1923 to the Kumamoto Earthquake in 2016, it can shed light on crisis management process development in Japan. Although it is hard to detect early warning sign of a great earthquake in advance, an organization can mitigate the impact of a crisis by initiating crisis prevention mechanism and recover to normalcy soon thereafter. Lessons learning are important to improve crisis management process.

Issue of the earthquake resistant buildings points out that people overlooked the standard of construction structures resistant before the Great Hanshin Earthquake occurred because they believed that construction structures were adequate to resist a great earthquake. As a result, many buildings collapsed after the Great Hanshin Earthquake hit. Therefore, the Japanese government revised regulations many times to ensure that building and houses could resist a great earthquake in the future. Furthermore, issue of Fukushima Daiichi Nuclear Power Plant Accident disclosed that there was a mistake of strategic issue diagnosis. The Great Earthquake in previous times did not have any impact on nuclear power plants in Japan. Hence, there might not be comprehensive crisis response measurement for nuclear accident during a quake. However, the Great Tohoku Earthquake triggered the worst nuclear accident at Fukushima Daiichi Nuclear Power Plant. It took times before the Japanese government to keep situation under control. Evidences of these great earthquakes support that issue diagnosis is important for Integrated Crisis Management because an organization will initiate crisis prevention mechanisms when it is found that the existing crisis response tool inappropriate. On the other hand, an organization is likely to ignore to initiate crisis prevention mechanisms if they believe that existing crisis prevention tools are adequate to respond a crisis.

Lessons learning from many great earthquakes in the past can provide guidelines for the Japanese government to improve countermeasures for a great earthquake. The Japanese government revised many regulations to ensure that many buildings can resist a great earthquake and improve their speed of crisis response and crisis recovery. In the case of the Mashiki elementary school, the building proved that it was reinforced to resist the great earthquake. Lessons learned from the Great Hanshin Earthquake helped the Japanese government to improve their disaster management and the speed of crisis recovery.

Moreover, communication during a crisis is essential because multiple stakeholders get involved. The Korean Massacre Incident during the Great Kanto Earthquake shed light on problem of rumor during the crisis. Therefore, the government must deliver clear and accurate information in official channels to people during a crisis.

REFERENCES

Cabinet Office, Government of Japan. (March 2015). *Disaster management in Japan*. Retrieved from http://www.bousai.go.jp./info/pdf/saigaipamphlet_je.pdf.

Detailed Analysis of the 2011 Japan Tsunami-Video Footage, Wave Heights and Damage Imagery. (2014, February 4). *extremeplanet.me*. Retrieved from https://extremeplanet.me/2014/02/04/detailed-imagery-of-the-2011-japan-tsunami.

Epstein, W., Nishimoto, T., Okumura, K., Swan, S. and Yanev, P. (2016, April 29). *The Kumamoto Earthquake Investigation: A primary Report.*

Hammer, J. (May 2011). The Great Japan Earthquake of 1923: The Powerful quake and ensuring tsunami that struck Yokohama and Tokyo traumatized a nation and unleashed historic consequences. *Smithsonian Magazine*. Retrieved from http://www.smithsonianmag.com/history/the-great-japan-earthquake-of-1923-1764539.

Krathwohl, D.R. (1998). *Methods of educational and social science research; An integrated approach (2nd ed.).* New York: Addison Wesley Longman.

Leng, R. (2015). Japan's Civil Society from Kobe to Tohoku: Impact of policy changes on Government-NGO Relationship and effectiveness of Post-Disaster Relief. Electronic *Journal of Contemporary Japanese Studies, 15(1).* Retrieved from https://www.japanesestudies.org.uk/ejcjs/vol15/iss1/leng.html.

Maxwell, J.A. (1996). *Qualitative research design: An interactive approach.* Thousand Oaks, CA: Sage.

National Oceanic and Atmospheric Administration, U.S. Department of Commerce. (1995, October 14). Great Hanshin-Awaji (Kobe) Earthquake, January 17, 1005. *Data.noaa.gov*. Retrieved from https://data.noaa.gov/dataset/great-hanshin-awaji-kobe-earthquake-january-17-1995.

National Police Agency of Japan. (2016, February 10). *Damage Situation and Police Countermeasure*. Retrieved from http://www.npa.go.th/archive/keibi/biki/higaijokyo_e.pdf.

Pailin, M. (2016, August 27). Life on the fault line: major earthquakes overdue and no one in the world is safe, expert says. *News.com.* Retrieved from http://www.news.com.au/technology/environment/life-on-the-fault-lines-major-earthquakes-overdue-and-n-one-in-the-world-is-safe-expert-says/news-story/0453eac947c8a9485be293364f56ac50.

Pauchant, C.T., and Mitroff, I.I. (1992). *Transforming the Crisis-prone Organization: Preventing Individual, Organizational, and Environmental Tragedies.* San Francisco: Jossey-Bass.

Preedaananthasuk, C. (2005). Integrated Crisis Management in Business Organization. *Mita Business Review, 48*(2), 107-128.

Preedaananthasuk, C. (2013). Change Crisis Management viewpoints with Integrated Crisis Management Approach. *BEC Journal of Naresuan University, 8*(1), 27-38.

Preedaananthasuk, C. (2014). Integrated Crisis Management: What did we learn from Flood Management in Thailand? *Universal Journal of Industrial and Business Management*, *2(7),* 151-155.

Stanford News Service. (1996, January 10). Casualty, damage estimates of great quakes revised upward. Retrieved from https://web.stanford.edu/dept/news/pr/96/960110greatquake.html.

The Japan Times. (2011, March 17). *Kanto area works on energy conservation*. Retrieved from http://www.webcitation.org/5y2awhmjE?url=http://search.japantimes.co.jp/cgi-bin/fs20110317a3.html.

The Japan Times. (2015, January 16). *The Kobe quake, 20 years on.* Retrieved from http://www.japantimes.co.jp/opinion/2015/01/16/editorials/the-kobe-quake-20-years-on/#.WSegIpKGOM8.

The Telegraph. (2017, January 27). *The World's 20 most visited cities-where does London rank?* Retrieved from http://www.telegraph.co.uk/travel/galleries/Top-20-most-visited-cities.

Vervaeck, A. and Daniell, J. (2012, March 10). Japan - 366 days after the Quake 19000 lives lost, 1.2 million buildings damaged, $574 billion. *Earthquake-Report.com.* Retrieved from http://earthquake-report.com/2012/03/10/japan-366-days-after-the-quake-19000-lives-lost-1-2-million-buildings-damaged-574-billion.

Yin, R.K. (2003). *Case Study research: Design and methods (3rd ed.).* Thousand Oaks, CA: Sage.