

Crisis Management a Chance to Reduce Damage Caused by Earthquake

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Abstract. From a system perspective, the crisis is simply a condition that disrupts the original system of order or parts of it that we call sub-system and disarranges its stability. In other words, the crisis is the situation that creates a sudden change in one or more parts from the variable factors of the system. In this paper, after a brief introduction about the crisis, surveying the earthquake crisis and the wide vulnerability of its areas, the description of the crisis and its features is outlined. The scientific understanding of the crisis is an important part of the process of crisis management and crisis-related research. Any more accurate understanding of crisis, like any other management, will help to control and guidance more effectively as possible. Having Define and explaining crisis, the crisis after the earthquake and Seismic Disaster Management problems mentioned, the need to identify the problems, deficiencies and shortcomings and the preventions to deal with earthquakes and also the need to develop a comprehensive crisis management programs in vital arteries and in all executive agencies and main companies associated with is stressed. More crisis management model analyzed and finally due to the crisis and its management, there are some suggestions regarding its management, especially earthquake, proposed.

Keywords: crisis management, vital arteries, crisis management model, Principles of Crisis inhibition, dealing with the earthquake crisis

1. Introduction

Crisis (small, large) in human history has always occurred. "Eisenhower" writes in diary that from the 25th in July 1956, when the Egyptian leader Abdul Alnasr, announced the nationalization of the Suez Canal, does not remember the day that a large or small crisis hasn't occurred in the world. The expression of crisis is not certain and may include internal and external events of nations or natural disasters with different effects. The traditional approach to crisis management previously believed that the Crisis Management is to quell the fire, which means that the crisis managers wait for affairs to be broken and then after the occurrence of destruction try to limit the losses caused by failures of formation. But recently the attitudes to this term have changed and based on recent meaning, crisis management means prevention preparedness or opportunity to prevent. One of the great natural disasters considered as a critical crisis is destructive and severe earthquakes that every few times occurs around the world and is something inevitable. This natural disaster, in addition to human and financial damage in damaged area, caused other side effects that we will talk about them in more detail. Earthquake is a crisis. Also due to the economic, social and cultural structure sometimes we have been observing the intensification of damages caused by earthquakes due to mismanagement and also incorrect function of popular forces at the time of the crisis situation. Reducing the damages caused by earthquake requires the cooperation of all governmental and nongovernmental organizations together, because government alone is not capable of controlling the damages and also public education in such a wide range.

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2. Definition of crisis

Scholars and researchers in different scientific disciplines and branches each used the word crisis in a different way to describe his/her desired phenomena. Medical science, defines crisis as “a turning point in the course of the disease, i.e. when the patient turns out to be saved or died” (Webster dictionary). Knowledge of international relations with respect to the events like the Cuban missile crisis displaces the war with crisis and not only a dangerous adventure which is the introduction of a war. Science of economy defined crisis “a natural step from business cycle which passes its courses based on its rules and scanning”. (Kelman Zhogelhar). Knowledge of history knows crisis as the date of entering to the world, which makes sudden large changes, the changes at the state of terror, a sudden acceleration toward history (Gerhard Masur, 1367). Knowledge of management defined crisis as the last stage of a life of a falling organization, when the imminent death is going to happen. (Weitzel and Jansson ,1989).From the decision making perspective the crisis is simply a situation that: 1- threatens the high and essential goals of the determiner unit. 2- It limits the reaction time for making decision. 3- It surprises the elements and determiner factors with its sudden appearing. (Charles Herman) .Another definition states that the crisis is the lack of conformity between needs and resources. This means that in normal circumstances, there is a balance between community needs in one hand and capabilities and resources on the other hand. With the occurrence of crisis situations that can result abnormal and unforeseen incidence natural and unnatural, like earthquakes, floods, great storms, war and ...and due to certain conditions that are imposed on society, we will see the balance between needs and resources no longer. By the occurrence of the crisis situations due to infrastructure damage all capabilities are extremely reduced and they try to compensate this loss of resources by sending help to conflict areas. On the other hand, despite the number of needs in crisis situations is very limited, but demand for the same small number of such requirements will increase so it imposes too much pressure to the community. Figure 1 shows schematically the relationship between supply and demand in normal and critical situations.

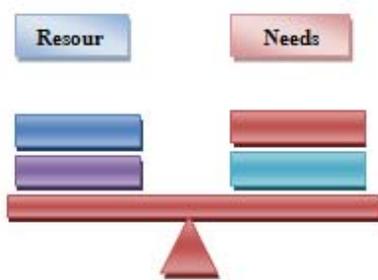


Figure 1.a: the relationship between supply and demand in normal situations



Figure 1.b: the relationship between supply and demand in critical situations

3. positive features of crisis:

Strengthening the sense of empathy and cooperation., Strengthening the integrity, Developing roles and responsibilities, Developing strategies and new and innovative decisions, Accelerating in making change and transformation, Entering shock to the system and building it up, Preventing from larger crises with notifying to the system.

4. Crisis after the earthquake

Extensive earthquake damage to urban infrastructure makes the community to face major problems due to structural differences between different societies; some of these problems have different definitions in countries and even cities, such as : Crisis of making managements operational, Crisis information, Security crisis, Unload and distributing aid sent crisis, The lack of paramedic's special skills crisis, Road connection crisis, Housing and sending injured crisis, Housing after earthquake's survivors crisis, Burial of bodies' crisis, Live bodies search crisis, Lack of coordination of acting forces crisis, Hygienic crisis, Machinery and equipment crisis, Orphans crisis, Crisis of girls and women after the earthquake, Water network crisis, Sewage collection network, Fueling network crisis, Power transferring crisis, Telecommunication system crisis, Special constructions crisis, Vital construction crisis, The crisis of structures with high potential for

damage. It is significant to review crises one by one as a basic infrastructure in crisis management and it is very important step for making required knowledge to an executive field of crisis management.

5. Crisis Management

Crisis management is an organized and systematic process that during this process the organization tries to identify and predict the potential crises and then uses a preventative measures against them to minimize its effects. Another definition says that: crisis management means to restore the balance again between resources and needs. It is clear from figure 1 that 3 most important tools are exist to establish equilibrium conditions: Increasing resources, Reducing needs, Fulcrum shift (crisis command).

As for it is mentioned in schematic figure 2, these three essential tools are necessary for the crisis management process.



Figure 2: Crisis management tools

By resources we mean public and governmental donations in the conflict region. Undoubtedly, all forces and authorities involved in crisis management would focus on the people affected and it is based on their needs describe his/her performance, thus for reducing the needs we should initially make document of past events happened regarding the crisis, and describe the situation arisen at the time. For reducing the needs, training people before the earthquake can be effective. In this case after the earthquake they have the ability to create security, providing temporary shelter, initial stages of finding live persons... simply. Fulcrum displacement or correct crisis command is in fact moving the fulcrum towards their needs and thus help re-establish the balance between supply and demand. In fact, moving the fulcrum is a comprehensive management program design and its implementation that can look upon the crisis with a large vision and it can have an accurate and executive definition for any part it. In addition road connection management or making security in the damaged areas requires a careful planning and complete coordination between the operating institutions. Crisis management consists of three main stages that include: Crisis management before the crisis takes place, Crisis management at the time of the crisis, Crisis management after the crisis

6. Earthquake crisis management problems

Earthquake crisis management has some problems that they are Lack of standard or seismic design regulations for vital arteries, Specialist shortage in the field of engineering and earthquake management of vital arteries, Lack of resources and scientific degrees ,Lack of geological information, Lack of information of soil status, Scarcity and imperfect maps and network installations, Insufficient funds, Overcoming the attitude of engineering over management, Lack of necessary personnel training at various levels, Lack or imperfect “comprehensive crisis management plans”.

7. Crisis management model

This model is consists of four elements: Preparation for crisis, Crisis prevention, Incident or event management crisis, Management after the crisis. Each of these cases includes categories of activities which this elements and classified activities are not necessarily sequential and in some cases they can be applied simultaneously. Each of the following will be discussed:

7.1. Preparation for crisis

A. Planning processes: timely planning, appointment of the roles and responsibilities: Providing effective and efficient crisis management requires a high commitment and responsibility. Several studies have shown that a disappointing percentage of companies have an appropriate crisis plan, about 50% of companies and even less than this rate, tried this plan to prove that if top management is not committed the program, the planning would not happen.

B. Systems and directories (booklets): infra structure, equipment, war rooms (operations), documentation and resources: Crisis management posts taken from employees have an intense focus on processes and systems such as selection and training of crisis team, reporting line of authority, crisis management centers before the preparation, trade protection and often a strong emphasis on relation with media.

C. Training and simulation: orientation programs, testing, exercises based on table, live simulation: United States management association reports that a survey of its members and customers following the terrorist attacks on September 11, 2001, revealed that only 49% had a crisis management plan and only 39% had conducted a simulation exercise. Most organizations exercise emergency reactions with a regular basis, from simple exercises in school fire or office evacuation to full-scale simulation of chemical accidents or deadly accidents that not only company resources but also police teams, firefighters and other emergency professionals are engaged in. but when it turns to test crisis management plan, many companies and organizations are potentially without the same level from commitment to be executed.

7.2. Crisis prevention

A. Primary warning, overview: inspection, subjective review, environmental review, predictive management, future studies...: Many tactical mechanisms exist to support early warning and overview, including leading points, media content analysis, public opinion points, analyzing the legislative process in business meetings, posts review, participating in conferences, the revision of key web sites, conversations group analysis. The challenge for management by increasing use of databases and thematic study of computer intensifies, and in most cases the information is not very little, but it is very much, and not only insufficient information management available, but also the lack of management commitment to adopt an effective and authentic action based on the information. Enron Health (2002) notes that, a monitoring system of the database and answer system can trace threats and opportunities to calculate the effects on plans and commercial operations and propose the coordinated reactions.

B. Subject and risk management: identify, prioritize, develop and strategy implementation: Early warning and overview plus identification and subject management prioritization and risk, are categories of activity which largely overlap each other. Recognizing the need for action, decide that what we do, and accomplishing them all basically based upon the management. Stalker (1997) says the first step is to analyze, including knowing what may happen to you or to your industry, and what you can do about it.

C. Immediate reaction: infrastructure, documentation, training: All the crises have not created by urgency, but they had enough to prove that immediacies and urgencies which are controlled badly and inappropriately have the potentiality to be crisis. While an organization in which management and preparedness against the crisis is well organized can control the urgencies routinely. A good emergency reaction process doesn't replace a capacity and an appropriate ability of the crisis management. Actually, understanding the difference between immediacy or emergency and crisis, is a factor for control and handling of both of them. Difference precise definition in general concept is not easy. Because a crisis in a small organization can be considered as an urgency in a greater organization. Organization must have its own criteria for defining when an emergency might be turned into a crisis, and crossing the immediate reactions to the critical incident management is one of the most risky elements of the management.

7.3. Incident or event management crisis

A. Crisis detection: development and emergency cross, reasonable assessment, early diagnosis: While the development detection and passing through an emergency to a crisis and controlling it can be difficult, identifying a crisis which is created in the way of except a serious emergency arise is still more difficult and as mentioned previously, early warning and overview in help to prevent a crisis, severe or chronic, are important, but if the management ignore the warnings or tries to suppress them, they will have no value. Sometimes the management is unsuccessful in reading the signs, like the known flawed Pentium chip.

B. System activation and its reaction: activation, effective mechanism for early warning, accessible support, making backups from systems. Definitely, identifying the crisis alone is not enough. Reactive systems must be fast and effectively activated. In august 2005 when Kathrina hurricane struck Louisiana, some federal American power said they don't understand its full impact, although anyone else could see it

live on television. Consequently, the activation and system reaction was slow and was criticized. Similarly, Fink (1986) exemplifies the Iranian hostage crisis in 1979 that clearly identified as a crisis. But Jimmy Carter was suffering from analysis paralysis and in showing an appropriate and effective reaction became unsuccessful. Inappropriate and inadequate reactions have many reasons, including lack of planning and practice, but unfortunately in most cases, management is more concerned about their reputation and credibility rather than taking action to control the crisis.

C. Crisis management: selection and execution of strategy, damage simulation, media reaction, stakeholder management: Koomboz (2002) with options analysis suggests three separate research processes about alternate approaches for the selection of crisis response strategies:

1- Collective defense. 2- Restoration and renewal theory of reputation and credibility. 3- Theory of communicating with the crisis situation.

7.4. Management after the crisis

A. Business recovery and improvement: operational improvement, financial costs, market maintenance, the resumption of business and trade, stock worth maintenance: In the consequences of every crisis, there is a reasonable need to move as quickly as possible for resuming the business like the past. This strengthens with the business improvement programs that are typically available and focuses extremely on disability of infrastructures like power cut, computers disabilities, and etc. in fact, many management models, consider the crisis and improvement as synonyms. However the reality is that the risks to an organization after a crisis stage could be even greater than the same in crisis time.

B. Issue effects after the crisis: juridical inquests, the legal prosecutions, credit damage, media scrutiny, litigation, pension reviews: Not only most of the costs after the crisis, legal costs or judgments, but also the most long-term effects and validity could be issues that arise after the crisis. As previously described, the issues after the crisis can be remained and influence all of industries. Decisions during the crisis are often taken under pressure or momentary, yet the ability to be influential on the organization in next years. Juridical and legal interrogations can be cruel, and management capacity for standing under such pressure often directly related to how organizations try to prevent crises and how to implement processes and programs that are reactive.

C. Evaluation, correction: analysis of underlying causes, management evaluation, processes review, applying changes: The end of each crisis should be the beginning of the next crisis preparation and Pinrooz (2000) says that companies that survive the catastrophe are more prepared for the coming challenges. Getting information from crisis team and evaluating crisis plan quickly, can be the most important part of crisis management, but unfortunately it often doesn't happen.

8. Conclusion

1-It must be clear that in which stage of life the crisis exists, and what are the root factors and causes to allow preventing measures and appropriate action and finally implementing a right decision.

2- Due to the increasing the expanding networks of vital arteries, increasing the volume of potential damage caused by earthquake should be monitored regularly.

3- Lack of specialist human resources, information, map, and necessary documents are the main problems of vital arteries.

4- Creating a comprehensive management plan for earthquake for all relevant companies is inevitable.

5- The first priority in the comprehensive plan of earthquake crisis management in vital arteries is the emergency measures to prevent the crisis.

8.1. Suggestions regarding crisis management:

Reviewing different modes of crisis through FAQ and reviewing the answers, Reviewing the various possibilities of the extension and advancement of crisis, Find topics that intensify the crisis, Determining the communications between authorities during crisis, Planning a correct diagnosis process of crisis, Selecting different alternates as a solution, Determination of the major problems for public opinion, Determining the

customers and contacts interests and considering them in crisis control policy, Selecting the best way to communicate directly with people, Determining management team and giving carte blanche, Determining the responsibility and authority range for the team and expert groups, Paying all the attention to every single executable program.

8.2. Suggestions particularly for earthquake crisis management:

Developing methods to estimate seismic vulnerability of networks and facilities, Providing and completing all relevant maps with necessary scales, Providing aerial, satellite photographs and required maps, Comprehensive studies of geology and tectonic, Developing a comprehensive plan of the earthquake crisis management in mother companies, Providing crisis management guidelines in cooperation with municipalities.

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