EXPLORATION OF KEY SUCCESS FACTORS IN LOCAL GOVERNMENT CRISIS RECOVERY

Hong-Cheng LIU

Exploration of Key Success Factors in Local Government Crisis Recovery

Hong-Cheng LIU[1]

Abstract

Crises in public safety are likely to result in casualties, life circumstance worsening, individual and social psychological unbalance, organization destruction and even paralysis, social disorder, and social, economic, and ecological environment damage. Crisis recovery of public safety presents the characteristics of complex contents, diverse forms, large difficulties, high public expectation, and limited time. Organisation for Economic Cooperation and Development (OECD) indicated that even the member states of OECD sometimes could not cope with the problems caused by large-scale crises. Taking the common people suffering from Kaohsiung gas explosion as the research subjects, total 200 copies of questionnaires are distributed, and 136 effective copies are retrieved, with the effective rate 68%. The research results show that, according to the overall weight of the evaluation indicators for the key success factors in local government Crisis Recovery, the most emphasized top five indicators among the 14 evaluation indicators are Regular Project, Recovery Evaluation, Evacuation Arrangement, Order of Importance, and Longitudinal Survey. Based on the experimental results, various discussions and suggestions are proposed, expecting to provide local governments with definite guidance and directions for Crisis Recovery.

Keywords: local governments, crisis recovery, crisis management, evacuation arrangement, supervision practice

[1] I-Shou University, Department of Public Policy and Management, TAIWAN, ROC. E-mail: hcliu@isu.edu.tw

Research background

Public emergencies, such as natural disasters, disasters, health emergencies, and social security incidents, could easily result in casualties, life circumstance worsening, individual and social psychological unbalance, organization destruction and even paralysis, cause of social crises, social disorder, and social, economic, and ecological environment damage. In general, crisis recovery of public safety refers to the government and societies utilizing various measures for the recovery and reconstruction process after the occurrence of crises in Public Safety, including the recovery of economic, social, and ecological environments as well as the recovery of affected organizations and individuals. Crisis recovery management of public safety is an inevitable problem in western countries, most of which stress on communities launching the recovery in crisis recovery of public safety. Home Office of the UK pointed out recovery as the community recovery and reconstruction process after the occurrence of crises. The US Department of Homeland Security regarded it as taking actions to normalize the communities, individuals, and the nation. Overall speaking, crisis recovery of public safety is human-centered and focuses on the living environment of people to actively launch the recovery and reconstruction of social, economic, and ecological environments.

In face of various negative effects from crises, people inevitably question why a crisis could seriously defeat various levels in a society, covering the common people mental, interpersonal relationship among the common people, state economy, and politics, why local governments cannot prevent from crisis outbreak in advance by mirroring the area which has broken out crises, and why local governments cannot immediately make decisions after crisis outbreak to effectively control crises and shorten the crisis effects on the society. Such problems are worth of further research and discussions that the key success factors in local government crisis recovery are explored in this study.

Literature review

Meaning of crisis

The idea of Crisis could be traced back to Ancient Greece. Crisis is Crimein in Greek, meaning *to decide* (Cowan & Rossen, 2013) that crises imply the turning point of certain event or organism in the development and evolution process, which is the key in determining good/bad or death and focuses more on the solution. Hermann first constructed the organizational crisis system model and proposed three standards to judge the crisis situation (Estep, 2013) in 1963 by organizing the viewpoints of various researchers. (1) Threat: Threat to the highly

prior objective of a decision making unit. (2) Restricted response time: Restricted response time before the situation rapidly changes. (3) Surprise: For decision making units, crises were unexpected surprises suddenly broken out. Based on such a system model, a lot of researchers proposed their own opinions of crises. For instance, Aspiranti *et al.* (2011) regarded Crisis as the situation presenting the following characteristics. (1) A decision maker was aware of the threatened value being important and further paid attention to it. (2) The situation was not expected that there was not a program or project to deal with crises. (3) Before the loss of value, the response time for making decision was restricted. Danhauer *et al.* (2011) referred crises to the outbreak of situation or event, which could threaten the survival development of the country, serious damage of people's life and properties, or other harmful consequence, without any alerts to the government or an organization that the decision maker was forced to make decisions and take actions in extremely short time to reduce disasters or losses down to the minimal. Howat *et al.* (2012) regarded crises as situations or events resulted from internal and external factors of an organization with immediate and serious threat to the survival.

Crisis recovery of public safety

Bosworth *et al.* (2011) mentioned that crisis recovery of public safety actually tried to recover individuals, families, and communities to the operation procedure before crises by providing professional services and various resources. Bernstein & Rakowitz (2012) indicated that crises in public safety would interfere in the normal operation of societies and affect the continuity of social functioning that crisis recovery of public safety aimed to reduce crisis damage and losses and recover various social activities to the state before the occurrence of crises. Kurtz & Boone (2012) briefly stated 1.to enhance human recovery and public order recovery as the prior objectives and bases for crisis recovery of public safety and the key success factors in crisis recovery and 2. to seize the opportunities in crisis recovery as the direction in public crisis recovery and the primary standard to embody crisis recovery performance. (1) To enhance human recovery and preserve public order. Gainey (2009) pointed out human recovery and public order recovery as the primary problems in crisis recovery of public safety. Philpott & Serluco (2010) regarded human-based crisis recovery of public safety as the most important principle. After the crisis outbreak, human life could be threatened with distinct degree. Maintaining and guaranteeing human life safety was the prior task of crisis recovery of public safety to enhance the physiological and psychological recovery. National Police Agency of Japan formulated *National Protection Program* in 2006, specifically arranging to protect national life safety in crisis recovery. Lalonde & Roux-Dufort (2013) indicated that dull social functioning structure, public management, and service dysfunction after the occurrence of crises could result in certain degree of social disorder, further induce political,

economic, and social unrest, and even cause still economic and social development (Ozdemir, 2012). From the public management and service functions, a single or some social organizations could not normally develop the businesses and the public organizational functions and services are obstacle after the occurrence of crises that such sectors or institutes needed to be restructured or reconstructed to maintain the integrity of public sectors as well as to enhance social order recovery. From the aspect of social functioning, crises would result in casualties and psychological disorder, lifeline system damage, work and social environment destruction and cause obstacles to the entire social functioning that the entire social functioning chain needed to be recovered to guarantee the public order recovery (Veil, 2011). (2) To seize the opportunities in crisis recovery. Ritching & Hornak (2003) pointed out the difficulties in crisis recovery of public safety and mentioned that the ignorance of crisis recovery or improper crisis recovery methods and measures could easily induce new crises, but recovery could "provide the opportunity to at least make up some losses and correct disorder". In the *2007 White Paper on Disaster Prevention*, Ministry of Internal Affairs and Communications of Japan indicated that the regional development programs could be revised, the public infrastructure could be improved, the national safety awareness could be enhanced, and new industrial recovery opportunities could be created by taking recovery as the turning point and concluding the lessons after crises. Crisis recovery also brought some new opportunities for social public safety management and services. Torley (2011) mentioned the combination of effectiveness and cost benefits as the characteristics of crisis recovery of public safety and the inner requirements of social management and public service competency in public sectors. Stephenson (2010) proposed that crisis recovery of public safety was often restricted by damage degree, time, manpower, and logistics support, appeared short-term recovery difficulties, and even was hard to be recovered; such problems required the integration of citizen self-help with local social, economic, and environmental situations and the encouragement of private participation to launch the recovery. Walsh (2010) integrated recovery with planning and system prevention and took crisis recovery of public safety as the turning point to reinforce the objective demands for crisis management abilities. It required absorbing crisis lessons, concluding real experiences, focusing on the overall demand for crisis prevention, response, and recovery, and systematically reinforcing crisis management in the recovery phase (Waltman *et al.*, 2011).

Research design and method

Delphi Method

According to Delphi Method, the ANP criteria are established in this study. Delphi Method, also named expert investigation method, is a decision-making method, with which the problems are mailed to the experts for the opinions and all expert opinions are collected for the comprehensive opinions, which are returned to the experts with predicted problems for further opinions. The experts revise the original opinions according to the comprehensive opinions. Such processes are repeated for several times to acquire a more consistent prediction result. According to the systematic program, anonymous opinions are issued in Delphi Method; that is, experts do not discuss with each other, no horizontal connection, but merely contact with the researcher. After repeated enquiries, summaries, and revisions by investigating the experts' opinions for several runs, consist opinions are organized as the prediction result. Such a method presents broad representativeness and is more reliable.

Analytical Network Process

Analytical Network Process (ANP) is expanded from Analytic Hierarchy Process (AHP). Saaty (1996) proposed ANP to cope with several decision-making problems which could not be presented with structural AHP in real situations, as the upper, medium, and lower levels in the real situation existed in networking relationship, rather than pure top-down linearity. Saaty's ANP rule combined AHP with feedback to replace the hierarchical network, in *The Analytic Hierarchy Process*, mentioned by McGraw-Hill in 1980; such two methods could systematically achieve the decision making. The major difference between AHP and ANP lied in the hierarchical structure of the former being linear, while it was non-linear of the latter. ANP presented dependence and feedback and calculated the weight with super matrix. The past literature revealed that most affairs or criteria related to people presented mutual dependence. ANP therefore is considered more proper for this study and could better conform to the practical demands.

Establishment of evaluation indicator

The questionnaires are emailed to the experts in distinct fields. The first expert feedback is calculated the considerations for local government crisis recovery, then the factors with similar properties are classified for further opinions. With several runs, the final results were classified into categories, which were formulated the key success factors in local government crisis recovery in the expert conference. Such key factors are regarded as the ANP dimensions to establish the ANP questionnaire. Figure 1 shows the research framework after the revision with Delphi Method.
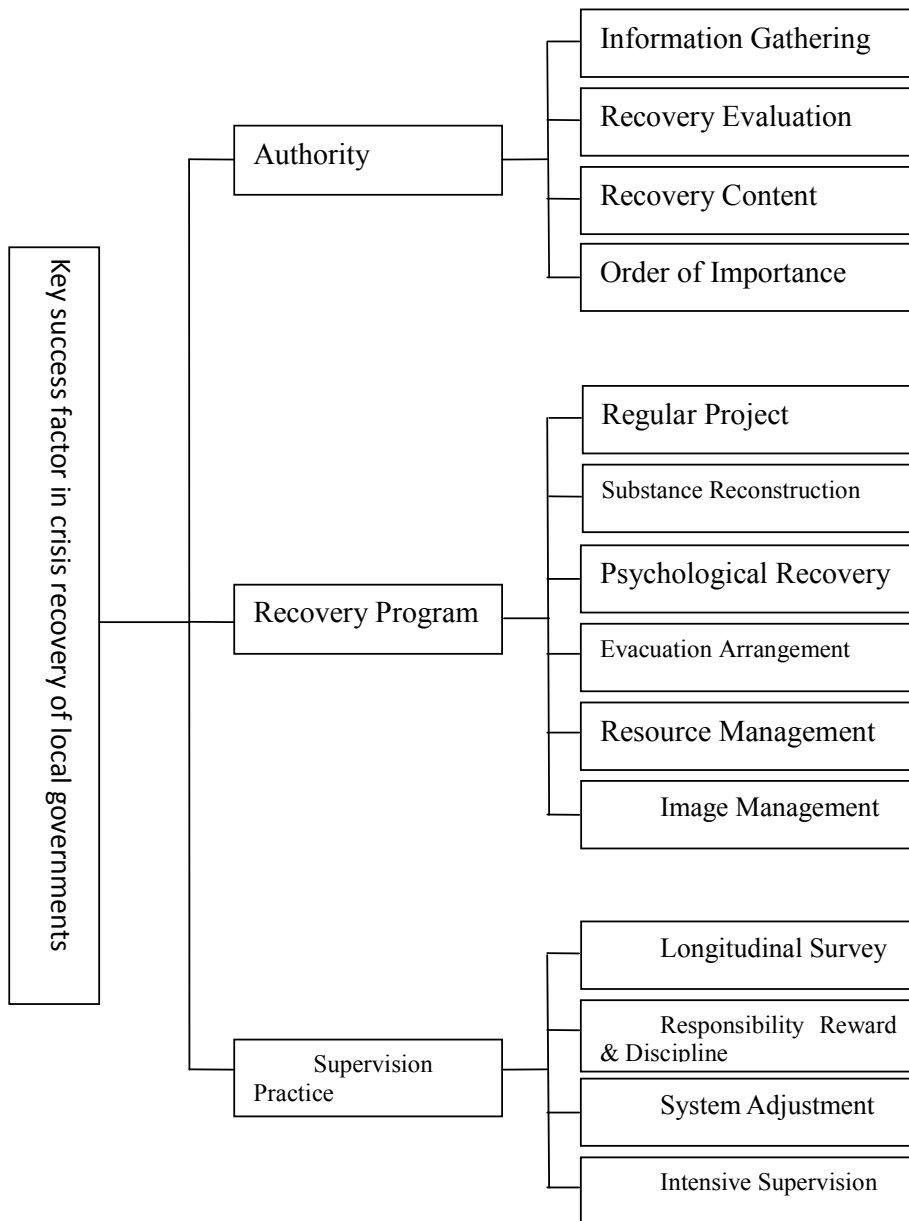
Figure 1. *Research framework*

Definition of evaluation indicator

Information Gathering. In the crisis recovery evaluation, the crisis effects are investigated to understand the first-hand information of crises, and the specialists enter the crisis site for field investigation and evaluation.

Recovery Evaluation. With systematic analyses, various types of damage and risk evaluation in different parts are taken into account and screened in which the dynamic evaluation is particularly reinforced.

Recovery Content. A full play covers the functions of different departments and multidisciplinary panel of experts as well as the functions of other social power, applying modern scientific technology and methods to launch the recovery evaluation.

Order of Importance. Public sectors being restricted by resources and environments in specific time and space would be restricted the recovery ability that the priority of recovery needs to be separated, especially the priority of object recovery.

Regular Project. Crisis recovery of public safety is better planned before the occurrence of crises and should be as perfect as possible for the rapid implementation after the occurrence of crises.

Substance Reconstruction. Substance Reconstruction stresses on the recovery and reconstruction of damaged infrastructure, information network, accommodation quarters, and ecological environments.

Psychological Recovery. Psychological Recovery refers to the sectors taking correspondent measures after the occurrence of crises, timely and correctly dredging and interfering in the public mental after experiencing the crises to reduce psychological crises and problems.

Evacuation Arrangement. People arrangement is divided into short-term arrangement and medium and long-term arrangement. The former considers to plan specific dispersal areas, routes, and transfer places and establish "crisis center" when necessary to shelter victims. Such shelters should be equipped the basic living facilities, and the social life unit should be preserved in the shelter so that the victims could psychologically support each other.

Resource Management. Crises in public safety often present heavy stress on the management of people and material demands in a short period. Authorities for recovery need to clarify the conflict among departments, evaluate and inspect the real demands for resources, and negotiate the internal departments for launching recovery.

Image Management. The credibility of public sectors is likely questioned after the occurrence of crises. In the recovery phase, public sectors should objectively

evaluate the image, find out the improvement measures or emergent compensation strategies, pay attention to the public assessment of public sectors, and focus on the effects of social opinions and even international opinions.

Longitudinal Survey. Based on objective, just, and high-efficiency longitudinal survey, the crisis development is traced and the possible movement is analyzed for effects.

Responsibility Reward & Discipline. The obvious and important responsible units and people in public management departments might be punished in the crisis management process, and the secondary responsible units and people should be punished after the recovery if not in the crisis management process. Meanwhile, the sectors and individuals with excellent responsibilities and performance in the recovery phase should be rewarded or appraised.

System Adjustment. Systems requiring changes and mechanism requiring reinforcement can be easily discovered in the actual recovery of system recovery and mechanism adjustment.

Intensive Supervision. The recovery does not mean the end of crisis management, but sectors and people are likely to relax in the phase. The relative sectors and managers should further reinforce the recovery supervision and practice and urge the recovery being actively launched.

Research subject

2014 Kaohsiung gas explosion occurred at midnight of August 1st in 2014 in Cianjhen District and Lingya District of Kaohsiung City. A lot of residents were dispersed from the buildings, lots of citizens stood along the streets, and many people were sheltered in parks and football pitches. The Kaohsiung City Government established several shelters at schools and cultural centers to shelter up to 1200 victims. The common people suffering from Kaohsiung gas explosion, as the research subjects in this study, are distributed 200 copies of questionnaires, and 136 effective copies are retrieved, with the effective rate 68%.

Data analysis and result

With the ANP expert questionnaire survey, the retrieved copies of ANP questionnaires were tested the consistency of the pairwise comparison matrix (C.I≤0.1 and C.R.≤0.1) in order to confirm the effectiveness of the questionnaire. Super Decisions was further applied to calculating the weight by multiplying the weight of the same element in the unweighted super-matrix with the weight of relevant dimensions so as to standardize the row vector of the super matrix. When the sum of the row vector appeared 1, it was a "weighted super-matrix". The weighted super-matrix was proceeded several power operations till the value was consistent.

Meanwhile, the convergent "limit super-matrix" *(Table 1)* showed the entire super matrix approaching the stability, when the sum of row vector appeared 1.

The overall weight of local government crisis recovery analyzed with the questionnaire survey is organized in Table 1, and the conclusion is summarized as below.

Among the evaluation dimensions in Hierarchy 2, Recovery Program, weighted 0.411 with 41.1% of overall weight, was mostly emphasized, followed by Authority (weighted 0.323) and Supervision Practice (weighted 0.266). The results presented Recovery Program as the most emphasized dimension in local government crisis recovery. Among the evaluation indicators in Hierarchy 3, the hierarchical weights were ranked as below. The evaluation indicators in Authority were ranked Recovery Evaluation, Order of Importance, Information Gathering, and Recovery Content. The evaluation indicators in Recovery Program were ranked Regular Project, Evacuation Arrangement, Image Management, Resource Management, Psychological Recovery, and Substance Reconstruction. The evaluation indicators in Supervision Practice were ranked Longitudinal Survey, System Adjustment, Intensive Supervision. And Responsibility Reward & Discipline.

Table 1. *Overall weight of Crisis Recovery of local governments*

Dimension	Hierarchy 2 weight	Hierarchy 2 ranking	Indicator	Overall weight	Overall ranking
Authority	0.323	2	Information Gathering	0.066	8
			Recovery Evaluation	0.109	2
			Recovery Content	0.062	9
			Order of Importance	0.091	4
Recovery Program	0.411	1	Regular Project	0.116	1
			Substance Reconstruction	0.043	13
			Psychological Recovery	0.054	11
			Evacuation Arrangement	0.104	3
			Resource Management	0.058	10
			Image Management	0.077	6
Supervision Practice	0.266	3	Longitudinal Survey	0.086	5
			Responsibility Reward & Discipline	0.015	14
			System Adjustment	0.072	7
			Intensive Supervision	0.047	12

Conclusion

According to the experimental results, the following conclusions are proposed to provide definite guidance and directions for local government crisis recovery. From the overall weight of the evaluation indicators for the key success factors in local government crisis recovery, the top five indicators, among 14 evaluation indicators, contain Regular Project, Recovery Evaluation, Evacuation Arrangement, Order of Importance, and Longitudinal Survey.

From the above analyses, it is found that local governments, as the body of crisis recovery of public safety, present the leadership on the recovery process. Among major crises in public safety, local governments need to organize professional staff, dispatch large-scale assistance in equipment and facilities, and provide financial support. Systematically, the design standard of crisis management systems and the crisis decision-making abilities of local governments are the premises and bases to well manage crisis recovery of public safety. In specific crisis recovery, local governments have to deal with the cooperation among horizontal sectors and vertically negotiate the top-down levels. Moreover, considering the external contact and communication, establishing the interactive coordination system among organizations, and enhancing the orderly participation of enterprises, non-governmental organizations, and volunteers in crisis recovery could directly affect the crisis recovery performance.

Suggestion

Aiming at the research results, the following suggestions are proposed in this study. Launching recovery preparation before crises. Local governments well preparing crisis recovery is the key in smooth crisis recovery. Among public crisis recovery preparations, various situational information should be collected and seized through different channels, unsecure factors need to be timely discovered and alerted, and the dynamic changes should be closely traced. The possibility of crisis outbreak needs to be analyzed in advance, the regular project for crisis outbreak, the crisis property, scale, coverage, and time should be well prepared, and the effects of crisis outbreak should be mastered. The completely correspondent crisis organization management system should be established, emergent recovery programs or plans need to be formulated, revised, and started depending on the situations, and social power should be mobilized to participate in crisis recovery. Local governments should also pay attention to cultivate the crisis recovery awareness, efficiently and practically prepare for the recovery, and formulate the recovery standards for crises in public safety (such as alert level of explosion sites, monitoring and emission levels of waste water in fireplaces) before the occurrence of crises. The dispersal routes, dispersal areas, and people arrangement places around large-scale public places need to be planned.

Correspondent Recovery Program and plans need to be formulated, practiced, and tested. The direction and practice of crisis recovery planning need to be reinforced to enhance the feasibility of preparation.

A full play could benefit the member power in crisis recovery. Local governments with a full play could benefit the power of social members in crisis recovery and is the basis of good crisis recovery. Crisis Management Departments in local governments should understand the public vision of the development in damaged locations, areas, or environments, precede recovery evaluation based on such vision, and reinforce the identification with recovery and reconstruction to form the objective consensus. Enhancing the orderly participation in the society could help understand the recovery evaluation plan or the planning steps, path, and schedule of reconstruction.

Launching properly emergent recovery on site. When local governments encounter crises in public safety in the rapid recovery, Evacuation Arrangement should be stressed on the prevention of the reoccurrence of similar crises for rapid improvement and recovery. Moreover, based on the principles of simplicity and continuous security, the infrastructure related to public safety and life, such as transportation system and lifeline engineering, should be immediately recovered.

Acknowledgments

References

Aspiranti, K.B., Pilchard, T.K., Mccleary, D.F., Bain, S.K., & Foster, A.L. (2011). Development and reliability of the comprehensive crisis plan checklist. *Psychology in the Schools, 48*(2), 146-155.

Bernstein , A.B., & Rakowitz, C. (2012). Emergency public relations: Crisis management in a 3.0 world. Blooming, IN: Xlibris.

Bosworth, K., Ford, L., & Hernandaz, D. (2011). School climate factors contributing to student and faculty perceptions of safety in select Arizona schools. *Journal of School Health*, *81*(4), 194-201.

Cowan, K.C., & Rossen, E. (2013). Response to the unthinkable: School crisis response and recovery. *Phi Delta Kappan*, *95*(4), 8-12.

Danhauer, J.L., Johnson, C.E. & Caudle A.T. (2011). Survey of K-3rd grade teachers' knowledge of ear infections and willingness to participate in Prevention Programs. *Language, Speech, and Hearing Services in Schools*, *42*, 207-222.

Estep, S. (2013). Crisis planning: Building enduring school-community relationships. *Delta Kappa Gamma Bulletin*, *79*(3), 13-20.

Gainey, B.S. (2009). Crisis management's new role in educational settings. *Clearing House: A Journal of Educational Strategies, Issues and Ideas*, *82*(6), 267-274.

Howat, H., Curtis, N., Landry, S., Farmer, K., Kroll, T., & Douglass, J. (2012).Lessons from crisis recovery in schools. *School Leadership & Management*, *32*(5), 487-501.

Kurtz, D.L, & Boone, L.E. (2012). *Contemporary marketing*. Australia and Singapore: Southwestern Cengage Learning.

Lalonde, C., & Roux-Dufort, C. (2013).Challenges in teaching crisis management connecting theories, skills, and reflexivity. *Journal of Management Education*, *37*(1), 21-50.

Ozdemir, S.M. (2012). An investigation of violence against teachers in Turkey. *Journal of Instructional Psychology*, 39(1), 51-62.

Philpott, D. & Serluco, P. (2010). *Public school emergency preparedness and crisis management plan*. Plymouth (UK): Government Horizons, Inc.

Ritching, R., & Hornak, N.J. (2003). *12 lessons from school crisis*. The Education Digest, *68*(5), 20-24.

Saaty, T.L. (1996). *The Analytic Network Process*, Pittsburgh: RWS Publications, Expert Choice, Inc.

Stephenson, J.B. (2010). GAO, *Environmental health: Opportunities for greater focus, direction, and top-level commitment to children's health* at EPA.GAO-10-545T.

Torley, M. (2011). *Elementary principal decision-making process during crisis situations in one northern New Jersey district*. Seton Hall University.

Veil, S.R. (2011). Mindful learning in crisis management. *Journal of Business Communication*, *48*(2), 116-147.

Walsh, R.J. (2010). *School response to violence: A case study in developing crisis response teams.* Edgewood College.

Waltman, P.A., Schenk, L.K., Martin, T.M. & Walker, J. (2011). Effects of student participation in hand hygiene monitoring on knowledge and perception of infection control practices. *Journal of Nursing Education*, *50*(4), 216-221.