

Explaining the Effect of Crisis Management Characteristics on the Performance of Crisis Managers using the Structural Equation Modeling (Case Study: Southeastern Provinces of Iran)

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Abstract

A crisis is any event with low possibility of occurrence and high impact of consequences that disrupts the order of the main system or parts of it and threatens its stability. Therefore, a proper management of this event will play a pivotal role in the improvement of a society. In fact, making correct decisions for an optimal crisis management depends on the success of several levels, and the characteristics of crisis managers is one of them. In this sense, paying sufficient attention to this factor will be of high importance in the optimal management of crises and the better performance of managers. This research aims to explain the effect of crisis management characteristics on the performance of crisis managers using the Structural Equation Modeling (Case Study: Southeastern Provinces of Iran). The required data was collected using an analytical-descriptive method, and the statistical population encompasses all the members of the Crisis Management Headquarters in the Provinces of Sistan and Baluchestan, Hormozgan, Kerman, South Khorasan and Yazd, who are roughly 100 persons. Using Morgan and Krejcie sampling table, 80 people were selected as a statistical sample by stratified random sampling method. Descriptive and inferential statistics (Pearson correlation coefficient test and Friedman test) were used to analyze the data. The results of this study not only confirmed the model of crisis management characteristics affecting the proper performance of crisis managers in the southeastern provinces of the country, but also showed that there is a significant difference between the crisis management characteristics of crisis managers ($p < 0.05$). Among these characteristics, the just culture has the highest rank, and the commitment of senior management is in the second rank. A proper crisis management is reached when the effective characteristics of crisis management, including the characteristics of crisis managers, are recognized and tasks are delegated to managers in accordance with their inherent and skillful characteristics. The results of this study suggest that the characteristics of crisis managers should receive more attention. Moreover, it is necessary to create an environment in which the managers have a better sense of responsibility and commitment –a precondition for the better performance of managers.

Keywords: Crisis management, performance of managers, resilience engineering, southeastern provinces of Iran

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Introduction

Natural and man-made disasters have increased significantly in recent years and have had a profound impact on people and organizations (Goklany, 2017). Natural disasters such as floods, earthquakes, volcanic eruptions, wildfires, hurricanes, and sand and dust storms, and anthropogenic or manmade disasters such as war, nuclear accidents, traffic accidents and the like, occur every day around the world (Omidvar, Abiri Jahromi and Abiri, 2015). Research shows that an average of 230 million people is exposed to natural disasters each year, and 1.2 million people were killed by disasters in the last decade (Twigg, 2017). During the last decade, Iran has experienced all kinds of natural and unnatural disasters. Some geographical and climatic features have exposed Iran to the threat of all kinds of natural disasters and hazards, and considering the disasters of the last decade in the country, the need for coherent and efficient management in times of crisis has once again become prominent. When unexpected events occur, working conditions in a community, especially in organizations that provide services, change dramatically and affect all activities. Therefore, due to the unexpected nature of events, especially natural disasters and the need to make quick and correct decisions and execute operations when they occur, theoretical and fundamental foundations created a science called crisis management (Karimi and Taghilou, 2020).

The term crisis management refers to a proper planning for crisis organization and control. It includes four basic elements: damage reduction, preparedness, emergency response, and reconstruction. A comprehensive crisis management system assesses potential risks and available resources, prepares programs to balance available resources and risks, and enables crisis control using existing resources (Kamali and Mirzaei, 2017). In fact, crisis management is a process through which disaster vulnerability is effectively reduced by using anti-crisis resources (Ghanbari, Nazari, Ghayebi and Samouei, 2017).

A crisis is any event with low possibility of occurrence and high impact of consequences

that threatens the executive capacity of a system and is characterized by the ambiguity of reasons, effects and means of coping with it. Therefore, decisions related to it must be made quickly. A crisis is any situation that disrupts the order of the main system or parts of it and disrupts its stability. It makes sudden changes in one or more parts of the system variables. The severity of a crisis depends on the factors that aggravate or reduce its effects and the existing techniques for managing and ultimately controlling it (Ghadimi and Padidarán Moghaddam, 2015).

Studies conducted in this area confirm the important role of managers in creating a crisis committee and crisis preparedness (Azadian, Shirali & Saki, 2014). Management is an essential element for organizations to achieve their goals. The manager is the official representative of the organization who is at the head of the organization, and since managers have more power and a higher decision-making position than other personnel, their crisis management characteristics can influence the final decisions and strategies (Naderian Jahromi, 2003). In this regard, Taghikhani and Pourkarimi (2019) showed in a study that there is a significant relationship between the organizational effectiveness and the components of communication skills, decision making, encouragement, novelty, work communication, leadership skills, professional skills, and using positive capabilities and developing activities. The results of the study of Banerji and Nidhi (2017) showed that the characteristics of crisis management are effective factors in proper crisis management. Chen et al. (2015) also concluded from their research that the crisis management characteristics of managers are a key factor in proper crisis management.

In fact, crisis management requires managers to have a complex set of characteristics or competencies to lead an organization in order to successfully cope with the crisis (Bullman and Dale, 1997; Burnett, 2012). Competencies are defined as a set of attributes and abilities to perform tasks or as a set of responsibilities and authorities (Lusk, Ristuj, Suntkova, Mika and

Zagorsky, 2015; quoted by Kordi, 2015).

The competence of managers is defined as a set of abilities, skills, and experiences, and a combination physical and mental readiness with a sufficient knowledge in using these characteristics to effectively perform specific tasks according to the given authority and public expectations. Competency is also defined as the readiness of the manager to achieve a better performance commensurate with infrastructural structures according to the standard (Hellaonka, 2006; quoted by Moradi and Farzaneh-Ghaleh, 2018). The performance of a crisis manager requires a lot of knowledge, skill and experience that cannot be achieved by study alone. Managerial traits or competencies that include skills and abilities contribute to the exceptional performance of a crisis manager. A crisis manager must be a strong person who can mentally and physically manage the binding process of an extraordinary event. He must be able to properly resolve crisis situations. Therefore, it is necessary for him to always develop his managerial skills (Tomastika, Stromanadleb and Sochs, 2012; quoted by Pourkarimi, Farzaneh, Azizi and Kordi, 2016).

According to what mentioned above, if we accept that making correct decisions in the optimal management of crises depends on the success of several layers, and that the characteristics of crisis managers are one of these layers, paying sufficient attention to this factor will play a decisive role in the optimal management of crises. In other words, the better knowledge and awareness of crisis managers about the factors affecting the crisis at different levels will lead to a better control and management of crises.

Moreover, the history of crisis management in coping with natural and unnatural disasters and hazards in the country, at least in the last decade, shows that crisis management institutions in Iran need comprehensive management. Identifying management shortcomings and challenges, and planning to address them will reduce the loss of life and property. The appointment of competent managers will lead to a cohesion in crisis management. In fact, appointing competent and responsible managers will play an

effective role in improving the condition of crisis management in Iran. Studies conducted in the field of crisis management is relatively new and is still in the early stages of development. It should be noted that every research conducted on the organizational-functional characteristics of crisis managers have been qualitative so far, and there is no research on the organizational-functional characteristics of crisis managers in Iran. As a result, the purpose of this study is to explain the effect of crisis management characteristics on the performance of crisis managers using structural equation modeling (Case study: southeastern provinces).

Theoretical Foundations

Organizations use crisis management knowledge to deal with crises. Crisis management is an applied science that seeks to find a tool by which systematic observation or analysis of crises can be used to prevent the occurrence of a crisis or, if it occurs, to reduce its effects, to prepare for rapid relief and improvement of the situation. However, still there are weaknesses in the results obtained from the implementation of crisis management strategies, and it is quite obvious that new approaches such as resilience engineering are needed to improve them. The characteristics of resilience engineering or crisis management take a broader look at the stages of crisis prevention, preparedness and response and includes seven principles: awareness, preparedness, flexibility, just culture, learning, clarity and management commitment. The discussions on each principle and their application go far beyond the four stages of crisis management and can thus improve the management of crisis and safety. Nowadays, resilience engineering has become an important field for understanding and managing safety in socio-technical systems (Kamali and Mirzaei, 2017).

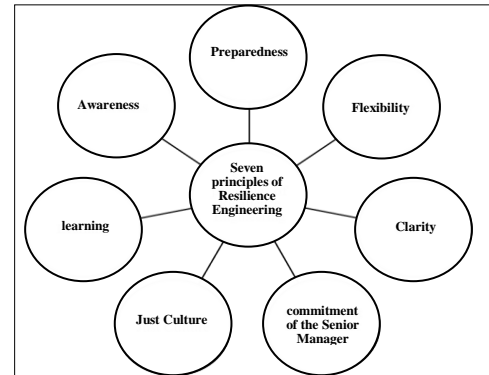
Resilience engineering can help people cope with unforeseen events and crises in the field of safety management and lead to the reduction of injuries and damages caused by crises. Given this fact, one of the distinguishing features of resilience engineering is its emphasis on understanding how crisis injuries can be reduced, how

people learn from what has happened, and how they adapt (Moradi and Farzaneh Ghaleh, 2018). Moreover, resilience allows organizations to continue to operate during and after a crisis in terms of their ability to maintain or recover quickly to a stable state. It includes features to prevent damages and losses as well as features for effective response after these events (Pourkarimi, Farzaneh, Azizi and Kordi, 2016).

Ranthal et al. (2006; quoted by Banerji and Nidhi, 2017) presented the basis of the seven principles of resilience engineering as follows (Figure 1):

1. Commitment of the Senior Manager: A senior manager demonstrates a commitment to identify the factors that are related to human performance. He tries to identify the actions of individuals that lead to errors and draw the organization's attention to their importance. Minimizing such actions is necessary because when a crisis occurs, due to the fact that the number of people referring to organizations increases, any mistake that is of no importance in daily activities may causes unpredictable conditions.
2. Just culture: It supports reporting errors to the organization and emphasizes the punishment of unsafe actions.
3. Learning: Any organization responds to crisis by repairing and improving the consequences, not by denying them. That is the extent to which an organization denies the consequences of a crisis instead of actually repairing or correcting them.
4. Awareness: It refers to the collection of data on the quality of human performance in the workplace, the size of the crisis, and the current capacity to defend it.
5. Preparedness: An organization actively anticipates problems and prepares for them. In human performance, preparedness means being ahead of challenges.
6. Flexibility: It refers to the organization's ability to deal with new challenges and crises in a way that maximizes its ability to solve problems. This requires that people be able to make important decisions without having to wait for management instructions.
7. Clarity: An organization is considered to have clarity when it is aware of the boundaries of safe work, knows how close it

is to the boundaries of unsafe work, and tries to reduce unsafe cases. (Ranthal et al., 2006).



F1. Seven principles of Resilience Engineering in times of Crisis (Source: Ranthal et al., 2006 quoted by Banerji and Nidhi, 2017).

Research Method

The method of the present study is descriptive with an applied aim. During the study, a heuristic approach was used at two levels of qualitative (data-based method) and quantitative parts. In the qualitative part, the statistical population includes all scientific elites in the field of crisis management, and in the quantitative part, the members of Crisis Management Headquarters in southeastern provinces of Iran (Sistan and Baluchestan, Hormozgan, Kerman, South Khorasan and Yazd) were asked to fill a questionnaire to assess the interaction of variables. Therefore, the statistical population in the qualitative part, which includes all members of the Crisis Management Headquarters of the southeastern provinces of the country (Sistan and Baluchestan, Hormozgan, Kerman, South Khorasan and Yazd), is about 100 people (the number of members from each province is 20 people).

In the qualitative part, the sample size was of no importance; and with a purposive sampling, as many interviews were conducted as to have sufficient results. In the quantitative part, from the statistical population, which includes the members of the Crisis Management Headquarters of the southeastern provinces of the country (Sistan and Baluchestan, Hormozgan, Kerman, South Khorasan and Yazd), a sample of 80 people was selected using Morgan and Krejcie sampling table by stratified random sampling.

In this method, the population was divided into subgroups called strata, from which samples were independently selected. This type of sampling ensures the reliability of the sample, especially in situations where the population is not very large. Therefore, the stratified random sampling was used so that each stratum of the population be present in the sample equally in homogeneous strata. Moreover, in the limited size of the population, this sampling increases the reliability and the accuracy of the sample in comparison with simple random sampling (Delavar, 2015). Accordingly, the five provinces of the southeast of the country were divided into 5 strata; and since the number of members of the Crisis Management Headquarters in each province is over 20 people, for each stratum, 16 members were randomly selected.

Data Collection Tools and Implementation Method

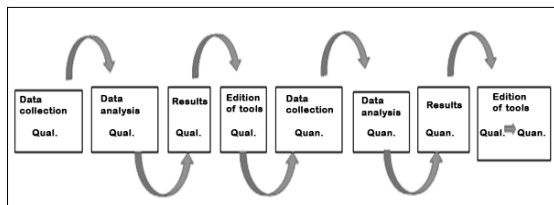
Data collection was done in two parts: qualitative and quantitative. To collect data in the qualitative part, the Internet, books and articles were used, and English journals in the field of crisis management were reviewed, and after collecting the written data, field study methods, such as interviewing the scientific elites, were conducted. In the quantitative part, after the design and the validation of tools, a questionnaire on the characteristics of crisis managers in times of crisis and hazards was prepared and distributed between the members of the Crisis Management Headquarters in the southeastern provinces of the country (Sistan and Baluchestan, Hormozgan, Kerman, South Khorasan and Yazd). In fact, the data collection was a combination of desk and field methods. In the present study, Persian and English books and articles were used to review the literature and records. In the field studies, interview tools (in the qualitative section) and questionnaires (in the quantitative section) were used (Figure 2).

Validity and Reliability

The validity of the questionnaire was checked by two quantitative methods (content validity index and confirmatory factor analysis to investigate construct validity) and a qualitative method (face

validity, in which the questionnaire was reviewed by some of the scientific elites of crisis management who shared their views and suggestions in written).

The external reliability of the questionnaire was checked by test-retest method, and its internal reliability was checked by internal consistency coefficient or Cronbach's alpha. After that, according to the collected data from the sample, the extracted model was evaluated. Finally, the characteristics of crisis managers in the southeastern provinces of the country were studied with the correlation-modeling method.



F2. Data Collection Method (Source: Kiamanesh and Sarabi. 2015).

Research Indexes

Any research requires index construction and operational definition of concepts and variables. The operational definition of variables means converting them into observable indexes

In the present study, the studied variables have been indexed and operationalized as follows (Table 1):

Variable	Dimensions	Sub-dimensions	Items
Characteristics affecting the performance of managers	Crisis managers characteristics	Senior manager commitment	1-10
		Just culture	11-15
		Learning	16-18
		Awareness	19-21
		Preparedness	22-35
		Flexibility	36-40
		Clarity	41-44

T1. Variables, dimensions, indicators and items (Source: Extracted from qualitative interviews).

In the inferential statistics section, the correlation matrix of the research variables and Friedman test were examined. The correlation matrix of research variables was examined using Pearson correlation coefficient test. This test requires the use of structural equation modeling. In fact, if there is a relationship between research variables,

we can use structural equation modeling. Friedman test was used to rank each indicator of the model. Data analysis was performed using SPSS software version 22 and three tests were performed using AMOS software version 22 (Table 2).

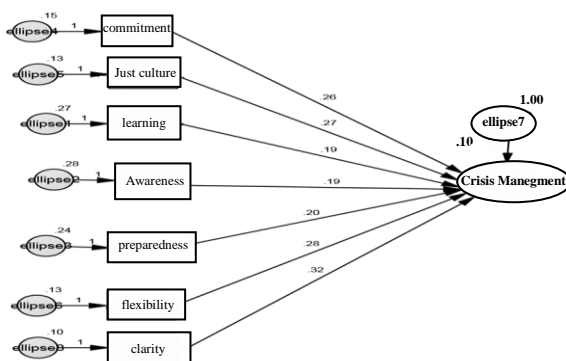
Variable	Cronbach's alpha	Average Variance Extracted (AVE)
Crisis Management	0.94	0.80
Senior manager commitment	0.73	0.75
Just culture	0.57	0.66
Learning	0.59	0.66
Awareness	0.60	0.69
Preparedness	0.91	0.83
Flexibility	0.62	0.71
Clarity	0.53	0.64

T2. Reliability of indexes (Extracted from questionnaires).

Findings

In the statistical population, 22 (27.5%) persons are under 35 years, 44 (55%) persons are 35 to 40 years, 11 (13.8%) persons are 40 to 45 years, and 3 (3.8%) persons are above 45 years. 14 (17.5%) persons have an associate's degree, 56 (70%) persons have a bachelor's degree, and 10 (12.5%) persons have a master's degree. The work experience of 20 (25%) persons is under 10 years, 44 (55%) persons between 10 to 15 years and 16 (20%) persons more than 16 years.

What is the model of organizational-functional characteristics affecting the performance of crisis managers in the southeastern provinces of the country? (Figure No. 3) (Table No. 3).



F3. Research Model (Source: Authors).

The table above and its values approve the research model.

What are the characteristics of crisis management that affect the proper performance of crisis managers?

Significance level of Table 4 shows that there is a significant difference between crisis management characteristics ($P < 0.05$).

Now the characteristics that have the most impact are examined:

Index	Description	Acceptable levels	Resulted levels
X ² /df	Relative chi-square	< 3	2.32
RMR	Root mean residual	< 0.1	0.092
GFI	Goodness-of-fit indices	> 0.9	0.90
NFI	Normed fit index	> 0.9	0.92
CFI	Comparative fit index	> 0.9	0.97
IFI	Incremental Fit Index	> 0.9	0.93
TLI	Tucker-Lewis Index	> 0.5	0.61

T3. Fit index of research model.

Qty.	80
Chi-squared statistic	24.97
Degrees of freedom	6
P-value	0.0

T4. Friedman test results.

Table 5 shows that the just culture has the highest rank. Senior management commitment is in the second rank, and the rank of other characteristics are as mentioned above.

Characteristics	Mean rank	Rank
Senior manager commitment	4.24	2
Just culture	4.87	1
Learning	4.07	3
Awareness	3.81	5
Preparedness	3.53	6
Flexibility	4.06	4
Clarity	3.43	7

T5. Results of Characteristics Ranking.

Conclusion

The results of analyzing the research data confirmed the model of effective management characteristics on the proper performance of crisis managers in the southeastern provinces of the country.

The results of the present study showed that there is a significant relationship between organizational effectiveness and the components of communication skills, decision making, encouragement, novelty, change, work communication, leadership skills, professional skills, and using positive capabilities and developing activities. Moreover, it is parallel with 85.9% of the variance of the organizational effectiveness, which is explained by the variance of the components of professional competencies.

A good management of crises is possible

when effective characteristics on crisis management, including managerial competencies, are recognized, and tasks are assigned to the managers according to their capabilities. At this time, we can expect a good performance from managers. The effective characteristics on crisis management affect the good performance of crisis managers in two ways: first, they direct the desire of people to do the duties that are consistent with their managerial characteristics, and second, these characteristics influence the choice of position and location for the tasks assigned to managers and subsequently employees.

The results of other analysis of research data also showed that there is a significant difference between the crisis management characteristics of crisis managers ($p < 0.05$), among which the highest rank belongs to the just culture followed by senior management commitment.

The results obtained from the present study are somewhat consistent with the findings of Banerji and Nidhi (2017), Chen et al. (2015).

The results of Banerji and Nidhi (2017) showed that just culture is one of the effective factors on good management and the use of optimal methods of equipping and dealing with crisis. The study by Chen et al. (2015) also showed that management commitment is a key factor in the predictive model of safety behaviors.

Every crisis manager or coordinator must have a number of characteristics. In this study, the just culture and then the commitment of senior management was most effective characteristics on the good performance of crisis managers.

A high level of just culture may prevent accidents and their negative consequences, such as disability and loss of manpower as the most important asset of any organization, high costs of compensation and treatment, loss of time, and reduction of overall productivity. Moreover, positive aspects of just culture in crisis management may expand the amount of learning from errors, and finding better solutions to deal with problems, it reduces potential accidents. It will be also possible to discover and address the existing hazards by creating an

atmosphere of friendship and establishing the possibility of open communication and positive interactions between the managers and the staff, and effectively prevent the occurrence of any future hazard.

When senior crisis managers have a sense of commitment, they can have stronger emotional connection and sense of belonging with their organization. This way they can work in the organization with more motivation and interest and believe in loyalty and work consistency, matters which they consider as their duty. Therefore, such managers will also perform well in times of crisis.

Encouragement of learning, flexibility, awareness, preparedness and clarity were also other characteristics of crisis management that were effective on the good performance of crisis managers.

Each study has limitations and the present study is no exception. The limitations of the present study can be the use of self-reporting and cross-sectional tools and the examination of a small statistical population which was limited to the members of the Crisis Management Headquarters in the southeastern provinces of the country (Sistan and Baluchestan, Hormozgan, Kerman, South Khorasan and Yazd) in 2019. Therefore, it is recommended that not only similar studies be conducted and compared in different statistical communities, cities and other parts of Iran, but also newer measurement tools or diagnostic interviews be used to explain and present the model of organizational-functional characteristics that affect the performance of crisis managers. Moreover, according to the research findings, the following suggestions are presented:

- Improving the learning abilities of managers through knowledge management, and in other words, controlling the experience and personal knowledge of managers along with promoting a culture of learning and dissemination of knowledge (if managers with experience and knowledge are properly motivated, the result will be the acquisition of necessary skills by them, making a difference in promoting a better safety and organizational culture, and ultimately improving the level of flexibility in organizations).
- Having the necessary commitment to

implement safety programs, respect safety in the workplace and implement the obligations of senior managers in this important matter (support and commitment of management to promote safety and organizational culture) to increase performance.

- Establishing classes for crisis managers in order to increase their awareness and preparedness in the event of unpredictable disasters.
- Informing crisis managers to pay more attention to learning and just culture if they want to improve performance.
- Clarifying the responsibilities of crisis managers.

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