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## ***Investigating the Use of IRI Navy Logistics Capacities in Case of Encountering a Crisis Institutions***

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### **Abstract**

Throughout history, Iran has always been exposed to many natural and unnatural crises due to its geographical, economic, cultural, natural, and political characteristics, and especially its location in the strategic region of the Middle East. This study aims to investigate the position and role of logistics capacities of the Islamic Republic of Iran Navy (IRI Navy henceforth) in encountering the natural disaster crisis. The entire participants included 120 senior officers of the Deputy of Readiness and Support, the heads of readiness and support of the affiliated regions and bases, and the middle managers of the headquarters and ranks of the Readiness and Support Command of Najaf among whom 92 were selected randomly based on Krejcie and Morgan's (1970) table. Data were collected quantitatively using a researcher-made disaster management questionnaires and IRI Navy preparedness capacities. Then, the validity of the questionnaire was assessed through confirmatory factor analysis and its reliability was assessed by Cronbach's alpha. To test the hypotheses and the accuracy of the conceptual model of the research, the structural equation modeling method using the partial least squares (PLS) method was used. Findings indicated the significance of IRI Navy's preparedness hypotheses on managing and reducing the damage caused by the natural disaster crisis. The results showed that the component of responsibility had the highest rank and importance and the components of timeliness, information, and technology, coordination, mobile systems, efficiency, and preparedness were among the next priorities of logistics capacity in case of encountering natural disaster crisis, respectively.

**Keywords:** Logistics Capacities, Crisis Management, Natural Disaster Crisis, IRI Strategic Navy

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## **1. Introduction**

Statistics show that Iran is one of the 10 most catastrophic countries in the world in terms of natural disasters, while 31 of the 41 types of natural disasters occur in Iran, 90% of the country's population is exposed to natural disasters and with this volume of accidents, Iran ranks sixth in the world in terms of natural disaster. Therefore, the need to pay attention to the position of crisis management is of great importance (Asadi, 2011). The industrialization of societies and the expansion of satellite communications and information transfer in general, as well as the growth of social, economic, and commercial organizations have caused most crises to become institutionalized and constitute an integral part of the internal nature of organizations (Tajik, 1397).

Meanwhile, military organizations are the most valuable assets of society for application in critical situations because of possessing high technologies and equipment and the necessity of constant readiness for rapid response to threats. Among security agencies, in particular, the army plays a significant role in the crisis. In order to deal with abnormal conditions, it may cause the process disruption to the activities of the organizations; therefore, the need to plan and create mechanisms is demanding to prevent possible disturbances. Thus, the issue of crisis management is considered as the use of the most practical issues in developing and developed countries. Managing the crisis of potential risks and available resources needs to make a balance of the available resources and capabilities as well as possible risks in order to control the existing resources of the crisis. Trained and efficient human resources, accurate and reliable information system, equipment, and efficient systems for executing an extensive and coherent operation can be the main pillars of successful crisis management (Kazemi, 2009). A variety of factors contribute to increasing the willingness of military organizations to provide relief to disasters and natural disasters across the globe. First, relief to people in these situations can improve the image of military organizations in public and provide educational opportunities for military forces, and perhaps can act as an implicit effective factor for military organizations to be able to convince



governments and nations to receive and allocate military budgets. In many countries, preparation for-war operations, fighting, and taking measures for the disaster crisis is natural, which is an important part of military training in military organizations. Today, most modern armies have a major part of their plan for relief, providing assistance, protection and air traffic assistance, protection and air traffic, logistic support, and natural disasters (Happiness, 1396).

Today, most modern armies have allocated an important part of their programs to relief, and they have gained rapid response and performing medical consultations, logistic support, air traffic, assistance distribution, conservation, and restoration of natural disasters. With the increase in natural disasters, military forces can be expected to play a major role in relief, especially in large disasters, where the capacity of humanitarian organizations such as the Red Cross and the Red Crescent could be limited. On the other hand, civil and humanitarian agencies are usually not suitable for effective and rapid response to natural disasters due to the fact that discipline and efficiency are the first things needed to respond to disasters and perform relief duties that are often dangerous threats and military organizations are more prepared. Furthermore, there are areas where military forces are undoubtedly unique in them; such as transportation mechanisms, and the ability to help immediate and evacuate people from the site of disaster (Abbasi, 1389).

Among the four armed forces of Islamic Republic of Iran, IRI Navy is one of the most important organs that due to the geopolitical situation of the country and access to free waters and in addition to this strategic position of the Oman Sea and north of the Indian Ocean (up to 10 degree) and simultaneous presence of the global top forces in this region, attention to crisis management is essential. The navy that has always been the hero of Iran since it has been the Iran's exemplary power of experienced workers and provided maximum facilities for helping the people to play the role as a powerful operator in the display of the authority of our country and the implementation of operational projects during the crisis. Prepared capacities are the most important factor affecting the practical and executive capacity of IRI Navy in crisis management.

Therefore, in this study, an attempt has been made to identify IRI Navy readiness capacities. The capability has identified the strengths and weaknesses of the existing system in IRI Navy and by identifying the damages in these capacities, it has improved the prepared capacities of IRI Navy in the face of crisis (Garkazi et al., 2015).

This study aims to highlight the undeniable role of the revolutionary forces, among which IRI Navy has been able to create good effects and blessings for the comprehensive development and progress of a country. Therefore, the commanders of IRI Navy, based on the Declaration of the Second Step of the Islamic Revolution, despite their capabilities in the field of manpower, equipment, structure, and proper planning to deal with such incidents, might face major problems and challenges that could be inspiring for them to provide the basis for decision-making and use of available facilities, real-time missions, unlicensed activities and the acceptance of risks and concerns, and the lack of transparency of strategies to deal with natural disaster crises.

Therefore, the main concern of the study is to examine the role and position of using the prepared capacities of IRI Navy in case of encountering the crisis in the Second Step of the Islamic Revolution of Iran. In addition, it aims to identify the capacities and then identify factors affecting these capacities as well as recognizing the damages and problems in IRI Navy readiness capacities. Finally, the purpose is to consider the proposed strategies to deal with the natural disaster crisis, given the capabilities of IRI Navy.

## **2. Theoretical Background and Literature Review**

### **2.1. Theoretical Issues**

#### **2.1.1. Crisis**

A crisis is an accident that occurs naturally or by humans, suddenly or increasingly, which requires urgent, fundamental, and extraordinary measures to resolve. The crisis has entered the social sciences and economics from the medical sciences. In medicine, a crisis is a condition in which a vital organism is disordered and endangered. In the field of social issues, at a time when society is out of the ordinary and in turmoil, a critical



situation prevails. Briefly, the word crisis from the lexical point of view is a phrase of confusion and sudden change of state, but from different perspectives, various definitions and interpretations of the concept of crisis have been presented (Kargar, 1394). The crisis is defined as follows:

A) Crisis is an unordinary situation where conventional management patterns lose their effectiveness at their peak.

B) Crisis is a situation that arises suddenly or uncontrollably as a result of natural and human events, happenings and actions, and causes difficulty for a human group or society, and eliminating the need for emergency measures.

C) Situations or incidents to which the response is beyond the available capacity.

(D) The United Nations Secretariat for Disaster Reduction has defined a crisis as a serious disruption in the functioning of a society that results in human, capital, or environmental damage.

E) According to the definition of the World Health Organization, any accident that causes damage or destruction that creates a need in excess of the response capacity of a society is called a crisis.

H) The crisis is considered as a disorder or distress or a sudden and severe physical and mental disorder that disrupts the course and course of normal conditions (Saveh Droudy, 2016).

#### **2.1.1.1. Common and General Symptoms of Crises**

Although no crisis is similar to one another. Discovering and understanding these key similarities are essential for planning to deal with a crisis and mitigate its adverse effects. Crisis inevitably affects decision-making in three dimensions.

1. Threatens the financial and vital goals of the decision-making unit.
2. Limits the reaction time to make a decision.
3. Surprises the decision-making elements and factors with their sudden appearance.



Therefore, three important factors in defining and diagnosing the crisis from the perspective of decision-making methods are significant as follows:

1. Threat
2. Time
3. Surprise

Because crisis situations vary according to the severity of the threat, the duration of time, and the degree of awareness, each of the three main determinants of the crisis may be as severe and important as one of the three dimensions. Imagine a cube that will be called a crisis cube (Pearson, 2009).

The following three-dimensional diagram, the sides of which are located at right angles to a cube, shows the degree of threat, time, and surprise:

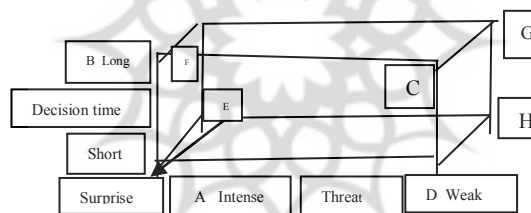


Figure 1. The sides of the crisis cube

- A: Completely critical situation: severe threat, short time, surprise.
- B: Emerging situation: severe threat, long time, surprise.
- C: Slow situation: weak threat, long time, surprise.
- D: Special or occasional situation: weak threat, short term, surprise.
- E: Reflective situation: severe threat, short time, predicted.
- F: Intentional threat situation: severe threat, long-term, anticipated.
- G: Normal situation: weak threat, long time, predicted.
- H: Administrative situation: weak threat, short time, anticipated.

As can be seen, each of the eight cube vertices represents a state in which the different values of the three main crisis factors in different

combinations represent the quality of a particular event. Each of these outlines also describes the types of possible situations according to the threat factors, time, and awareness. Undoubtedly, political, military and other events will inevitably take place on the sides of this cube. Therefore, the three main causes of crisis visualize situations in the space inside the cube (Willem, 2012).

### 2.1.2. Crisis Management

According to McCarthy, the main goal of crisis management is to achieve a reasonable solution to eliminate abnormal conditions so that basic interests and values are preserved and secured (Razmkhah, 2013). Crisis management is a process to prevent a crisis or minimize its effects when it occurs. To perform this process, one must plan the worst situations and then look for ways to manage and resolve them. In crisis management, by observing and analyzing the crisis in an integrated manner and using the available tools, efforts are made to prevent the occurrence of damages, and in case of occurrence, in order to reduce the adverse effects and consequences, the required facilities are required (Mohammadi Namghi, 1398).

Crisis management: The process of predicting and preventing a crisis, dealing with, and intervening in a crisis, and recovering from a crisis.



Figure 2. Crisis Management Steps

### **2.1.2.1. Effective Steps in Crisis Management**

Crisis management requires a systematic approach that is based on awareness, managerial sensitivity, and a good understanding of the importance of careful planning and organizational readiness. There are six main steps that an organization can take to better prepare for a crisis (Darabi, 1398).

#### **1) Facing the crisis**

Facing a crisis is taking any action that is necessary to reduce the damage caused by the crisis. Some organizations have already developed a crisis management plan that allows managers to respond favorably. They should measure the level of support of the people as well as the valuable assets of the organization including intangible assets such as good faith, and the mental image of the organization. They must respond to the crisis with courage, strong will and commitment, sobriety, and perseverance. Appropriate crisis management can greatly facilitate facing the crisis and relief from danger (Jalali Farahani, 2013).

#### **2) Rethinking**

After examining a crisis by dealing with it, managers need a rejuvenation to compensate for the mental fatigue caused by this pressure. This process is an opportunity for managers to find the most appropriate answers to the following questions:

- a) What and how did it happen?
- b) What is the cause of this incident?
- c) Why did it happen this way?

Rethinking is not finding the culprit or the scourge. Crisis damage must be thoroughly evaluated to determine its significance and negative impact on the organization. By addressing these issues, rethinking provides the basis for the efforts needed to strengthen organizational capacity in learning and crisis prevention (Hafah, 2013).





### **3) Renovation program**

After rethinking, the modernization of methods is done as the logical step. If a crisis management plan is not available, it should certainly be added to the management procedure. The crisis management plan needs to be updated, and changes must be made immediately known to all employees involved in the organization's crisis management plan. If managers play this role well and provide collaboration with like-minded people and others, positive change will occur, and as a result, the organization will become stronger and less vulnerable (Arz, 1396).

### **4) Feeling the crisis**

The main purpose of feeling crisis is to find the first signs of danger of a potential crisis. In fact, this stage is monitoring the internal and external environments of an organization. Analysis of strengths and weaknesses, opportunities, and threats will help to carefully examine the public environment and identify warning trends that may threaten the organization (Idaho, 1396).

### **5) Intervention and action**

Feeling and understanding the signs of a crisis in situations where the early signs of danger are so obvious that they cannot be ignored, may force managers to intervene. Once managers are convinced that the intervention is the right approach, they must implement their intervention strategy quickly and in a timely manner. The best strategy is to prevent the growth of a potential crisis and contain it radically. A recent example of an effective intervention strategy is Singapore's use of quarantine to control the 2003 severe respiratory syndrome epidemic. This highlighted measure showed that the right step had been taken, so Singapore was soon removed from the list of SARS virus-infected areas by the World Health Organization (Jalali Farahani, 2013).

### **6) Final actions in the face of a crisis**

When interventionist measures are not able to contain an initial crisis, all the possibilities of the organization should be used as a last resort. An organization that has a crisis management plan implements its plan and

puts all members of the crisis management team fully prepared. All support resources (manpower, financial resources, and equipment) and logistics must be provided in advance (Heidari Tafreshi, 2011). Threat assessment, forecasting, planning, preparedness, maintenance, and survival of the organization, and increasing the sustainability and continuity of the mission are the most important measures of crisis management that are done by the components of this system (Bahrami, 1392).

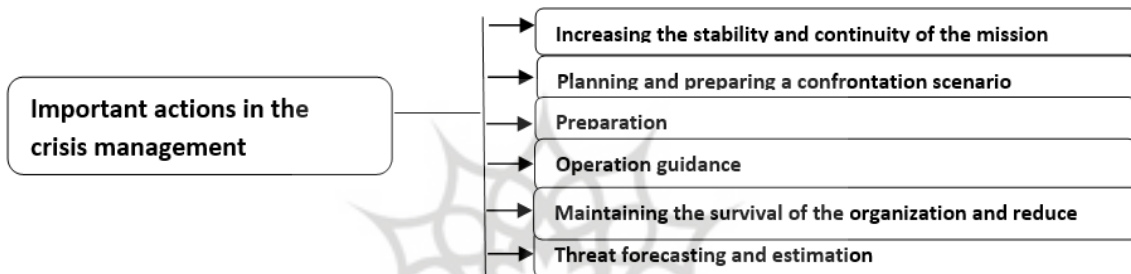


Figure 3. The Most Important Actions of the Crisis Management System

### 2.1.3. Logistics

Among the crisis management subsystems, the logistics subsystem, as one of the main pillars in operational organizations, plays a fundamental and decisive role in advancing the assigned missions. Among the six measures, the crisis management system has assigned a major share of logistics to the preparation of forces, maintenance and survival of the organization, and the continuation of missions (Parsaiyan, 2014).

Logistics refers to all coordination activities to study, research, study, and estimate the basic needs and requirements in the field of tools and equipment, machines and tools, facilities, and all matters related to procurement, production, insurance, maintenance, warehousing, distribution, transportation, adjustment and preparation of method, system design and instructions and supervision. The Logistics system can be considered as one of the most important subsystems of any organization,



especially military organizations. One of the main characteristics of military organizations is geographical extent. This feature causes the logistics system and support of these organizations to have a planned and integrated transportation system. The issue of size and type of transport fleet is a medium-term issue, and finally, various decisions about routing, planning, and control of the transport fleet are short-term decisions (Ahanchi, 2013).

#### **2.1.4. Readiness and Support**

Readiness and support, responsibility for preparing, supplying, warehousing, transferring, distributing, and caring about the equipment, materials, and services, transportation, engineering, maintenance, evacuation of the injured, and hospitalized individuals to be sent on missions, etc. (Abroumand, 1390). The crisis preparedness and support system have a fundamental advantage in two dimensions, which are presented in Figure 4.

##### **1) Reaction rate**

One of the most important features of readiness and support system is the prompt reaction to sudden changes. As the time interval from feeling the need for goods and services to meeting the need for goods or services decreases, the confidence of the crisis management system in the efficiency of the preparedness and support system increases. A responsive readiness and support system deals with predictions and transformations. Therefore, predictability is of special importance (Alvani, 2013).

##### **2) Flexibility**

Preparedness and support should be provided and implemented in accordance with the conditions and situations, and at the same time in accordance with environmental changes, and changes that occur from different dimensions, and may affect the system readiness. Dealing with these developments, and creating an appropriate response can provide an

appropriate mechanism to change structures and management to be adaptable to changes (Sarfarazi, 2016).

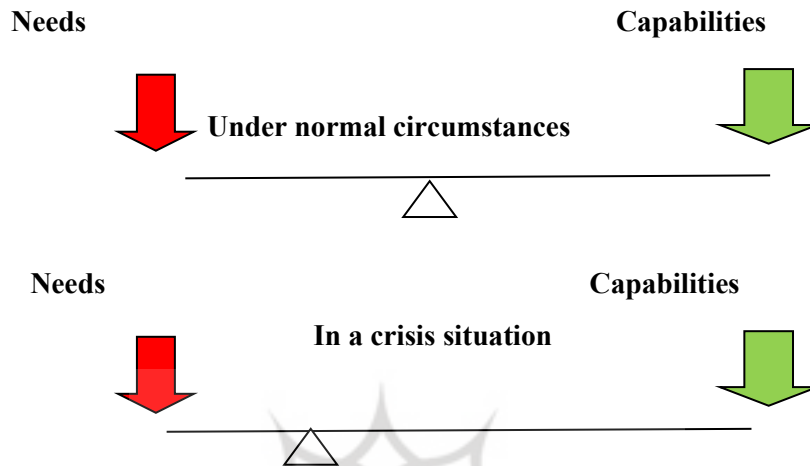


Figure 4. Different Crisis Situations

The mission functions of the crisis logistics unit include part of the inherent logistics tasks. Among all, the functions of supply, maintenance, distribution, and transportation of ready strategic items and services in the field of crisis logistics unit and the rest of them are performed by other prepared units. Strategic items and services in critical situations include operational power, weapons, ammunition, and equipment, as well as personnel transport services. In order to achieve the two strategic goals of logistics, namely "maintenance and survival" and "continuation of the missions of the organization", creating self-sufficiency in the provision and distribution of the mentioned items and services is of particular importance (Ebrahimabadi, 2016).

### **2.1.5. Natural Events and Disasters**

It is called a set of harmful events, which have no human origin. These events are usually unpredictable or at least have not been predicted for a long time. Natural events appear in many forms. Earthquakes, floods, hurricanes, tornadoes, tsunamis, hail, avalanches, lightning, extreme temperature changes, droughts, and volcanoes are examples of natural disasters. Some natural phenomena are indirectly caused by human actions.



For example, disasters might occur due to increased air pollution or global warming, as well as floods due to deforestation by humans (Asadi, 1390).

## **2.2. Literature Review**

Codor et al. (2021) have stated that in disaster management, pre-adding relief resources may significantly improve the efficiency of the relevant operations. The development of new strategies based on this idea for relief equipment distribution operations may also have good benefits, as it allows the use of local resources at a critical time after a disaster. Dorit et al. (2017) have presented a model that prepares the relief supply chain to deal with the crisis. Their model provides a convenient tool for selecting relief sites.

Roh Al-Fada and Hassanzadeh (2015) conducted a study to investigate the multi-objective problem-solving modeling of allocating location and crisis relief logistics with a view to maximize the coverage percentage of casualties. In the study, a proposed model for logistics planning with the aim of improving the results of logistics measures in response to crisis situations can be made to transport the injured goods in a way that makes the best use of resources and maximum efficiency.

Abbasi Raei et al. (2015) reviewed a study with the aim of locating, deploying, and counter-deploying units in military exercises using a two-level planning approach. The results of modeling and problem-solving showed that if the principles presented in the study are used, the selection of a suitable place for training and the selection of a suitable place for each unit participating in the training is done in a more desirable and scientific way. Ghasemi et al. (2015) conducted a research entitled "Presenting a multi-objective mathematical model of locating, allocating and distributing relief goods in conditions of uncertainty". The goals were to minimize the number of unserved injured people and to minimize relief costs in the affected areas. Simultaneous optimization of relocation sites, resource allocation, distribution and delivery of goods, and evacuation of injured (pre-and post-crisis conditions) were among the innovations of the study.



Ishaghi et al. (2017) conducted a study entitled “Supply Chain Design of Vital Goods in Crisis and Case Uncertainty” with a scenario-based approach. The results showed that with increasing the supply rate, the number of shortages and the cost of shortages decreased, and with increasing the capacity of shelters, the number of people who were not transferred from the accident point and the cost of non-transfer of people decreased, and the number of people transferred from the accident point increased. Taqva et al. (2016) highlighted the effectiveness of three main components of the detection and response approach, including stability, speed, and flexibility on military electronic logistics with the mediating effect of electronic logistics with IT infrastructure components, including cargo tracking technology, timely production and distribution, capacity, and ease of transportation.

Azad Shahraki (2015) conducted a study on the optimization of multi-commodity relief logistics networks for critical earthquake conditions. The aim of the study was to minimize the cost of preparedness and response to the crisis management phases. For this purpose, an optimization model was presented in the face of uncertainties. To show the application of the proposed model, a case study was conducted based on several earthquake scenarios in Isfahan. Khaleghi (2011) in a study provided a model of logistics system crisis management. The results showed that logistics is the backbone of all relief and relief operations and is one of the main subsystems of crisis management, including logistics activities, maintenance and repair of transport equipment and machinery, and basic engineering services. The main features of the crisis logistics system are the dynamics of flexibility, the integration of the speed of action, the responsiveness, the ability to maintain continuity and support, the readiness, and the adaptability. Darabi (2011) studied the research of logistics strategies in crisis. Trained and efficient human resources, accurate and reliable information system, equipment, and efficient logistics system to carry out a comprehensive and coherent operation can be the main pillars of successful crisis management.

### 3. Research Hypotheses

The main research hypothesis is as follows:

IRI Navy's supply capacities affect natural disaster crisis management.

And the sub-hypotheses include:

Hypothesis 1: Responsibility affects natural disaster crisis management.

Hypothesis 2: The use of IRI Navy mobile systems has an effect on natural disaster crisis management.

Hypothesis 3: The readiness of IRI Navy supply capacities has an effect on natural disaster crisis management.

Hypothesis 4: Efficiency affects natural disaster crisis management.

Hypothesis 5: Information and technology affect natural disaster crisis management.

Hypothesis 6: The ability to coordinate with other organization of IRI Navy supply capacities has an impact on natural disaster crisis management.

Hypothesis 7: The punctuality of IRI Navy capacities has an effect on natural disaster crisis management.

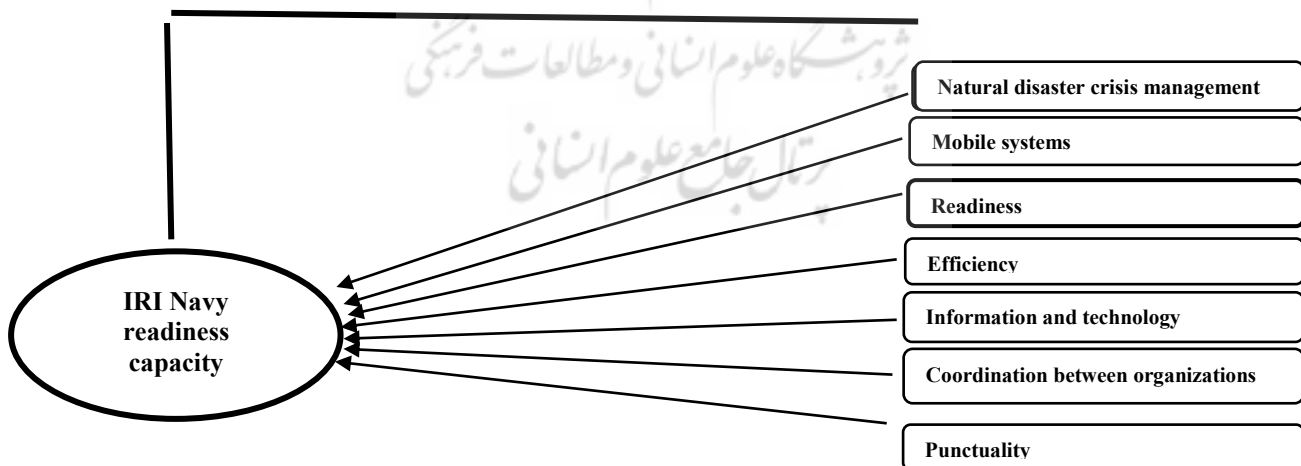


Figure 6. Conceptual model of research

#### **4. Research Method**

The current study benefited from quantitative research methodology to address the research objectives. Since this study uses structural equation modeling (SEM) to test hypotheses, this study employed a correlation matrix analysis. SEM and PLs software were used to analyze the data. The statistical population of this study was 120 senior officers of the Deputy of Supply and Support, heads of Supply and Support of Regions and Affiliated Bases, and middle managers of the headquarters and IRI Navy Supply and Support Command who have been working in the first six months of 1400 and in the second six months of 1400. The statistical sample was determined based on the Krejcie and Morgan's (1970) table as 92 participants by stratified random sampling. Data collection for this study was done in the following two ways;

- 1) Library method: all information and contents related to theoretical issues were gathered by reviewing books, articles, dissertations, research reports, and other valid sources.
- 2) Field method: by attending to areas and bases affiliated to IRI Navy, the researcher provided the measurement tool, which was two questionnaires as follows:

##### **A) IRI Navy Readiness Capacities Questionnaire (researcher-made):**

This questionnaire has 27 items and its purpose was to examine readiness capacities. This questionnaire is based on the Likert scale, which ranges from 1 to 5. It has 7 subscales of responsibility (4 items), use of mobile systems (3 items), readiness (3 items), efficiency (7 items), information and technology (3 items), coordination with other organizations (3 items), and timeliness (4 items).

##### **B) Natural Disaster Crisis Management Questionnaire (Kamani 2009)**

This questionnaire consists of 32 items and 4 subscales of prevention and risk reduction (5 items), preparedness (5 items), confrontation (13 items), and rehabilitation and reconstruction (9 items). To evaluate the research questionnaire, the Likert scale has five options from strongly disagree to strongly agree. To determine the validity, the questionnaire was given to professors and experts and they were asked for their opinion, which finally



confirmed the face validity of the questionnaire. Cronbach's alpha was used to measure the reliability of the questionnaire. In Table 1, the reliability measures are calculated separately for the variables. The reliability of IRI Navy Readiness Capacities Questionnaire and Natural Disaster Crisis Management Questionnaire was 0.78 and 0.85, respectively, indicating that the reliability of the questionnaires was desirable.

Table 1. Cronbach's alpha reliability coefficients

Variable	Cronbach's alpha
IRI Navy Readiness Capacities Questionnaire	.87
Natural Disaster Crisis Management Questionnaire	.85

## 5. Research Findings

### A: Descriptive statistics

No.	Variable	Frequency type	Frequency	percentage
1	Gender	Man	92	100%
2	Education rate	Bachelor's degree	31	34%
		Masters	48	52%
		P.H.D	13	14%
3	Experience	Under 20 years	12	13%
		20 to 25 years	29	33%
		25 to 30 years	42	45%
		Over 30 years	9	9%
4	Organizational position	Command	32	35%
		Staff	28	3%
		Managerial	23	25%
		Masters	9	1%
Total			92	100%

Table 2. Descriptive characteristics of demographic variables of a statistical sample

### B: Inferential statistics:

In order to study and explain the preparedness capacities in crisis and natural disasters, the structural equation test in the PLS software environment was used to determine the impact of each of the factors and indicators.

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Variable	Composite reliability	Cronbach's alpha	Extracted variance
Responsibility	0.71	0.72	0.61
Use of mobile systems	0.77	0.74	0.83
Readiness	0.79	0.75	0.62
Efficiency (ability to use heavy and light vehicles)	0.78	0.74	0.61
Information and technology	0.81	0.79	0.8
Ability to coordinate with other organizations	0.75	0.77	0.83
Punctuality	0.81	0.72	0.75
Natural disaster crisis management	0.86	0.85	0.76

Table 3. Cronbach's alpha, composite reliability, and convergent validity (AVE)

### Structural model evaluation:

The purpose of evaluating the structural model is to examine the quality of the relevance of research hypotheses and data. In other words, it aims to determine the degree of validation of research theories in practice (Hir et al., 2013). To evaluate the structural model, first, the fitness of the structural model is examined, and then analysis is done.

### Structural model fitness:

Unlike the covariance-based approach, in the variance-based approach, the evaluation of the measurement model, and the structural model in the variance-based approach are based on a set of nonparametric criteria (Hir et al., 2013). Structural model fitness consists of three steps including calculation of coefficients of determination, effect size and validity, and goodness of fit (GOF). To select the best model, the global quality standard proposed by Amato et al. (2004) was used as follows:

$$GOF = \sqrt{\overline{communality} \times \overline{R^2}} = 0.68$$

Measures the average of each variable and the quality of the external model.  $\overline{R^2}$  is the mean  $R^2$  for each latent exogenous variable.  $R^2$  measures the quality of the internal model and is calculated for each endogenous variable according to the latent variable that describes it. A fit higher than 0.36 reveals the better quality of the model acknowledging that this model





is well explained by the partial least squares. The fitness of this model is equal to 0.68, which indicates the appropriate and desirable efficiency of the model. It was found that the most impact was related to the effect of responsibility on natural disaster crisis management and the factors of punctuality, information and technology, ability to coordinate with other organizations, mobile systems, efficiency (ability to use heavy and light vehicles), and readiness were also significant concerning natural disaster crisis management. In addition, 49.5% of natural disaster crisis management was explained by IRI Navy preparedness capacities by the research model.

In determining the fitness of the structural model, the first and most basic criterion is the coefficients of significance  $z$  or  $T$ -Values. This criterion is used to measure the relationship between structures in the model.  $T$ -coefficients above 96 1.96 to 58 2.58 are significant at the 0.05 level and  $T$ -coefficients above 58 2.58 are significant at the 0.01 level.

## **6. Discussion and Conclusion**

In this section, first, the significance of the hypotheses is examined and then the research suggestions are presented. The final part of this section is the limitations of the research.

Hypothesis 1: Responsibility affects natural disaster crisis management

The regression coefficient (standard) between the two variables of responsibility of IRI Navy supply capacities and disaster crisis management was equal to 0.851 and according to the obtained  $t$ , which was greater than 1.96, the first hypothesis was confirmed. The result was consistent with those of the research conducted by Ishaqi (1396), Samimi (1395), Abbasi Rai (1397), Moghimi, and (1396), Jiang et al. (2019).

Hypothesis 2: The use of IRI Navy mobile systems has an effect on natural disaster crisis management.

The regression coefficient (standard) between the two variables of use of IRI Navy mobile systems and natural disaster crisis management was equal to 0.551 and according to the obtained  $t$ , which was greater than 1.96, the second hypothesis was confirmed. Findings were in agreement with the

results of Khorshi Damghani (2012), Ghasemi et al. (2015), and Moghimi (2017).

Hypothesis 3: The readiness of IRI Navy supply capacities has an effect on natural disaster crisis management.

The regression coefficient (standard) between the two variables of the readiness of IRI Navy supply capacities and natural disaster crisis management was equal to 0.463 and according to the obtained t, which was greater than 1.96, the third hypothesis was confirmed. The obtained result was consistent with studies carried out by Feyz Elahi et al. (2011), Ruh al-Fada (2017), Ghasemi et al. (2015), and Abbasi Rai (2015), Pablo (2019).

Hypothesis 4: Efficiency affects natural disaster crisis management.

The regression coefficient (standard) between the two variables of the efficiency of IRI Navy supply capacities and natural disaster crisis management was equal to 0.516 and the obtained t was more than 1.96, so the fourth hypothesis was confirmed. The result was in alignment with the findings of Tawfiqi (2011), Darabi (2011), Azad Shahraki (2015), and Abbasi Rai (2015).

Hypothesis 5: Information and technology affect natural disaster crisis management.

The regression coefficient (standard) between the two variables of information and technology and natural disaster crisis management was equal to 0.582 and according to the obtained t, which was greater than 1.96, the fifth hypothesis was confirmed. The result obtained from this hypothesis is consistent with some of the results of Darabi (2011), Issaei (2007), and Abbasi Rai (2015).

Hypothesis 6: The ability to coordinate with other organization of IRI Navy supply capacities has an impact on natural disaster crisis management.

The regression coefficient (standard) between the two variables of coordination with other organizations and natural disaster crisis management capacities equaled 0.574 and the obtained t was greater than 1.96, confirming the sixth hypothesis. The result was in line with the



research findings of Ahmadpour (2011), Hosseinpour (2007), Issaei (2007), and Pablo (2019).

Hypothesis 7: The punctuality of IRI Navy capacities has an effect on natural disaster crisis management.

The regression coefficient (standard) between the two variables of punctuality and natural disaster crisis management was equal to 0.604 and according to the obtained t more than 1.96, the seventh hypothesis was confirmed. The results can be reflected in other similar studies conducted by Tofighi (2011), Khaleghi (2011), and Yadegari (2010).

Main research hypothesis: IRI Navy supply capacities have a positive and significant effect on natural disaster crisis management.

In order to investigate the agility of IRI Navy supply capacities in crisis, the regression coefficient (standard) between the two variables was equal to 0.703 and according to the obtained t, which was greater than 1.96, the hypothesis was confirmed. The obtained result was consistent with the findings of Tawfiqi (2011), Darabi (2011), Azad Shahraki (2015), and Abbasi Rai (2015). The research findings showed that among the components of IRI Navy supply capacities, the component of responsibility had the most significant effect, and the factors of punctuality, information and technology, ability to coordinate with other organizations, mobile systems, efficiency (ability to use heavy and light vehicles), and readiness were also significant concerning natural disaster crisis management.

Given the importance of responsibility, attention to the following indicators can be fruitful in natural disaster crisis management:

\* Active dynamics, local and centralized control, preventive and responsive support resources (availability).

The component of punctuality includes the following indicators that play an important role in the success of crisis management:

\* Providing logistics goods and services with appropriate quantity, quality, time, and place.

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Considering the information and technology component with the following indicators, it will play a significant role in the prevention, preparedness, and response phase:

- \* Application of new technologies, information and knowledge management, communication, and electronic exchange.

The component of coordination with other organizations includes the following indicators that are effective in the four phases of natural disaster crisis management:

- \* Joint effort, interdependence, functional integration, proper command, and control.

The component of mobile systems that has a positive effect on natural disaster management in order to achieve the desired result includes the following indicators:

- \* Eliminating inefficiencies and loss, role effectiveness against cost-effectiveness, standardizing and specializing integrated support

The efficiency component, which includes the following indicators, has a significant impact on natural disaster crisis management:

- \* Continuity of logistics support, appropriate organizational structure, equipment updates, stability of logistics self-sufficiency, reliability of logistics system, facilities, warehouses, and creativity and innovation of employees.

Given the importance of the readiness component in the crisis management phases, its indicators are as follows:

- \* Foresight and judgment, resource needs assessment, and coordination of planning and programs.

#### **7. Suggestions for Further Research**

1) Identification and investigation of new logistic services in developed countries and proposing a solution for their development in the country.

2) In order to formulate policies and clarify the future of the way to manage IRI Navy preparedness capacities in natural disasters, information, operations, and IRI Army Preparedness and Support Deputy, scrutinizing



the previous data regarding natural disasters are demanding to provide the roadmap to reduce the damage caused by the occurrence of natural disasters.

3) In order to participate and mutually benefit from the capabilities, capacities and potentials of the parties (Natural Disaster Research Institute and the Crisis Management Organization and IRI Army), it is effective to conclude a memorandum of joint research, training, and executive cooperation.

4) It is recommended to introduce a postgraduate course at IRI Army universities under the title of Military Logistics Management in Crisis Management with two branches (Natural Crises and Unnatural Military Crises).

5) It is suggested to implement training courses in order to increase the skills of the forces involved in the ready capacities of IRI Navy at the level of the four forces of the Army in the form of seminars, training courses, pamphlets, etc.

6) Public-level training is recommended to raise public knowledge and public awareness for early logistic measures.

7) In order to smarten the proposed model and improve communication and information systems, a comprehensive systems under the title of comprehensive mobile logistics management system in crisis should be designed and implemented by the Deputy of ICT in the IRI Army.

3) In order to provide the best services of IRI Navy supply capacities in crises, it is necessary to prepare a comprehensive and systematic view on providing a clear view of all assets.

## **8. Limitations of the Study**

Every research is affected by some limitations and this study is no exception. The limitations and problems that existed in the implementation of the current research and in the interpretation of research results and its generalizability were as follows:



1. In this study, a questionnaire was used to collect the data and some participants may have refused to provide a real answer and given an unreal response.
2. Due to the military nature of the studied organization, there was limited access to the information required to be presented in the present research.

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