

Passive Defense in Preventing Natural Risk of Flood in Cities (Case study: city of Shirvan)

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Abstract

Today, passive defense in crisis management is an essential part of strategic management. Present research in the field of passive defense was done in 2014 to reduce the risks of flood in Shirvan city. The methodology used here was library and data collected through 120 questionnaires, which were distributed among authorities such as government authorities, the Red Cross and municipality, and then they were analyzed by SPSS. Before pursuing any long term goal, crisis management is essential for ensuring the stability and continued success of an organization. Principally, organizations that primarily exposed to the crisis are more prepared to face with it. Effective crisis management requires a disciplined and systematic approach that is based on awareness, managerial sensitivity and a good understanding of the importance of careful planning and organizational readiness. It was concluded that necessary measures are not taken into consideration about the risk of flood in the city and officials and staff from relevant departments who are highly educated and have effective role in the crisis management in cases such as locating shelters are not employed appropriately. The paper proposes that essential steps in Shirvan city needed to be taken for preparation versus flood crises.

Keywords: passive defense, flood, city.

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Introduction

Security is the cornerstone of a developed society and the essential element needed for mental, spiritual and physical health of the community. Insecurity undermines social capital of people of the society as well as significance of their human and religious values and norms severely. Our religious and national teachings also explicitly corroborate this fact that violence violates religious norms and values. Since the socio-political system of the country is based on such a foundations and our aim is to highlight such norms in society as well as institutionalization of them in people's actions, therefore, insecurity will be an actual or potential threat against the fundamental values of the system. Insecurity severely limits the choice of people and in many cases divest the right of choice of them and hence it will undermine capabilities and standards of their life and as a result, it would undermine national security. Thus, an attempt is made to consider the national security and passive defense and by defining security in terms of flood, this concept is reviewed in Shirvan city (Eskandari, 2011: 21).

Problem description

Shirvan city as one of the cities of Northern Khorasan province for the following reasons is very important to investigated and researched in terms of urban systems and passive defense measures in it. Reasons such as the risk flood from the north and east of city, inattention to the passive defense in urban development plans of the city, adjacency to the dam Barzou and its dangerous position, existence of Atrak river and its branches and location of most of administrative offices in the administrative site of the town in Imam Khomeini (RA) region requires that by recognition of the methods of other sciences, e.g. passive defense, to plan for reduction of vulnerability of community in the case of gangers (Azizi et al., 2011:25). People around the world face every day with events which cause death, injury, destruction of

properties and disruption of daily activities. These unpleasant experience calls incidents, accidents, and crises (Valad-Beigi et al., 2010:17). Occurrence of natural disasters such as floods, earthquakes, hurricanes and tornadoes often remains a devastating impact on human settlements (Abdullahi 2001:19). Development of human civilizations throughout the history has been challenging with a variety of natural disasters and in many cases, irreparable damages have caused by the disasters on human society (Fallahi, 1997:15). This research is looking to determine the best places to build crisis management bases with giving emphasis on the passive defense in Shirvan city and given the risk of flood from the North and East of the city of Shirvan, adjacency of the city to the dam Barzou and its dangerous position as well as presence of the river of Atrak and its sub-branches requires based on the principles of passive defense to explain and to grade locations of Shirvan city and its sensitive and critical points and then to predict functional and operational strategies to solve this problem. Now, the question is that what is the role of passive defense in preventing from the risk of flood in the city of Shirvan?

Importance and necessity of research

With respect to the rapid population growth and urbanization, urban crisis will very worryingly increase. Although the more advanced technology has provided comfort and the necessary facilities against natural disasters such as flood, but cities are very vulnerable to these events. The certain thing is that the abundant and dense population of cities will ultimately lead to the damages due to these events (Yoshiaki Kavata, 1993:34). Geographical location of Shirvan city implies that given the location of the city on the path of different rivers, it is necessary the forecast the probable floods in the future and we should give careful attention to the reasons of creation of this natural disaster and provide the necessary strategies to reduce its effects.

Literature

Kamran et al. (2011) in their paper about the application of passive defense in urban planning in the region of Shahriar concluded that it necessary at least the vital centers of the administrative town, e.g. government office, gas and water offices, etc., to be decentralized and each of them to be moved surround the town. Locating on the path of earthquake fault lines and potential flooding would prevent development of the town (Haji Ibrahim et al., 2006). In an article on the passive defense in architecture, mechanisms to reduce disaster risk by using the principles of passive defense in comprehensive programs of crisis management, it was concluded that by using effective action along with practical, cost effective and multi-objective plans in the preparation stage before the crisis, we can reduce significantly the severity and extent of damage and casualties caused by hazards (Abdullahi, 2001). In the book of crisis management in urban areas, it is concluded that it is necessary to operationalize activities such as dam, canal, etc. by municipality, increasing the number of rescue stations, involvement of people through organizations crisis institutions (Taheri and Behbahani, 1996). Other related studies include: proper design of urban spaces in order to reduce the vulnerability of cities by Mohammad Reza Parvizi, investigating the causes of flooding and solutions to deal with it by Poormohammad and Makhloq, crisis management and solutions for control of influential factors on the occurrence of flood with case study in Nekarood of Mazandaran by Mohammad Ali Hadian Amri, Seyed Ramzan Mousavi and Karim Soleimani, crisis management and securing cities against natural disasters by Maryam Hadizadeh and flood and urban networks by Hamid Jalalian.

Demographic characteristics of the study area

Among the important issues that arise in the context of passive defense is the demographic characteristic of the study population. According to this, the population of the study area based on census in 2011 was 88254 that compared to that in 2005 had increased.

The sampling frame for the research

In this study, we have tried according to what that is asked to consider organizations and agencies that further deal with passive defense, which include three organizations. In order to investigate the validity and reliability of the study two organizations were selected. In the following, organizations that sampling is done on them in terms of history and goals as well as functions are briefly presented. In the questionnaire, a series of closed questions with the option of a five-point Likert scale was used. Just a question at the end of questionnaire is provided to reflect comments of respondents. The structure of the questionnaire is consisted of two sections: the first section provides information on gender, age, type of employment, work experience, education and the position in enterprise. The second part includes a series of 30 closed questions and 5 tables of ranking questions that respondent with respect to the issues raised above states the desired rating in a scale from one to seven. Overall, given the statistical community which includes 120 employees of the municipal, government states and the Red Cross of Shirvan, a total of 120 questionnaires distributed that of them 107 questionnaires were returned and 13 questionnaires were not returned. Finally, 100 questionnaires out of the 107 returned questionnaires were randomly selected for the analysis.

Scope of research

Study area in this study includes the town of Shirvan which is the center of Shirvan city. It is located in the northeastern of North Khorasan province. This province is bordered on the north by Turkmenistan, on the south of the city

by Esfaraen and on the East and West of the city by Bojnoord and Faruj, respectively. Distance of the center of Shirvan city to Bojnoord in North Khorasan province is 52 km and to the city of Mashhad in Khorasan Razavi province is 195 km. This city is between 03' 37° and 65' 37° in latitude and between 02' 57° and 58' 18° in longitude. It has a height of 1067 meters above the free seas level and an area of 3904 square kilometers (Pirzadeh, 2006:33).

The main terminology and concepts of research

Definition of passive defense: passive defense consists of a series of non-armed actions that enhance deterrence, reduce vulnerabilities, sustain essential activities, promote national stability and facilitates crisis management in the face of enemy threats and military actions (Eskandari, 2011:21).

Dispersal: decentralization, extension and distribution of forces, equipment, facilities or our activities, in order to reduce their vulnerability to threats so that a collection of do not constitute a single target (Malik et al., 2012:98).

Spatial planning: spatial planning is type of strategic planning which tries to study the communication of human with environment and his activities and present the most desirable form of this relationship as a comprehensive development program (Eskandari, 2011:19).

Bed: it is part of the river or stream that with respect to the hydrological statistics of Daghab and the maximum overflow with a return period of 25 years by the Department of Energy or water companies of the region establishes. Where it is necessary, floods with return periods of less than or greater than the benchmark of 25-year return period is calculated.

Frontage: frontage is part of lands around the traditional marsh, natural lakes and natural rivers which is located immediately after the bed. It is necessary as the easement right for the help to the advantage and it is need for its

protection. Frontage of natural streams or rivers, whether they are permanent or seasonal is from 1 to 20 meters (Abdullahi, 2003:43).

Flood: various conditions and several factors affect the occurrence of flood events, including natural and human factors. Although natural factors has been introduced as the main cause of the damage caused by the floods, the role human factor and his actions not only has not been less than the role natural factors, but in many cases it has been the main cause. To further reduce the effects of flooding on urban construction, different measures, including construction and managerial measures, can be taken, which of each of them by using factors and in specific time periods has been implemented. However, caution should be taken in the use of these measures, because in some cases, in the absence of monitoring and proper enforcement, they will act as the causes of the crisis and damage. If the managerial and construction actions be used by alone, they can be helpful and effective, whereas the combination of these two methods would enhance success and efficiency of these plans against flood several times. Committing actions to deal with urban flooding should be done in the short, medium and long terms and the introduction of the implementation of these methods will be short, long and medium term planning (Abdullahi, 2003:58).

Rivers: rivers due to the natural factors or human interference erode through the erosion of the floor and displacement of the rivers' sides. Continuous of erosion behavior of rivers, each year destroys the agricultural land, coastal installations, bridges and public buildings that are installed in the margin of them. Increasing population growth has led to the need for further exploitation of the resources of rivers and streams (Abdullahi, 2003:17).

Watershed scopes of the city and flooding causes

Watershed scopes of Shirvan city including the scope of Atrak with an area of 270000 hectares

and the scope of Golol ana Sarani with an area of 30000 hectares and given the fact that more than 90% of the supply of water for drinking and farming provides by the city's groundwater, the necessity for controlling flood and soil erosion with the aim to drink of the springs, groundwater resources and aqueduct as well as the above mentioned fields will reveal. In the city of Shirvan given the arid and semiarid climate and its mountainous being, severe grazing, lack of vegetation, degradation of the land, non-systematic cultivation on steep slopes, i.e. in direction with the slope, provide favorable conditions for soil erosion, development of ditches, flooding and its damage. Atrak River is the major river of the city. Moreover, we can refer to the major rivers of the city including Gholjoq, Honameh and Gelian that after irrigating the agricultural lands and orchards of the city exit from the west of Shirvan city.

Major floods of the Shirvan city

One the severe floods occurred in spring 1976 after a heavy rain and consequent flood in the river of Atrak destroyed the houses and installation of the city's drinking water systems as well as streets, which fortunately did not include any fatality. The other one was in the late spring in 2012, which caused flooding in rivers and caused damages to the crops of wheat, sugar beets, corn and tomatoes in the central part of the city.

Discussion

The major age group included 59 persons (53.2% out of all) were in the range of 30 to 39, the lowest age group included 21 persons (12.5% out of all) were between the ages 40 and 50, which shows the youngness and activeness of the respondents. Also, 82 respondents (63.2 % out of all) were male, 30 respondents (26.8% out of all) were female and other respondents (10% out of all) did not specify their gender. This shows that the most influential people among the Crisis Staff are men, which is in line

with the general knowing of the study. Most respondents, i.e. 78 respondents (53.2 out of all) had a Bachelor degree and the smallest group including 12 respondents (4.5% out of all) had graduate degree. This represents that professionals are also involved in the Crisis Staff, which have an important role in crisis management. 30 respondents (28.9% out of all) were vice president and 80 respondents (62.1% out of all) included others other experts and 10 respondents (8.9% out of all) were directors. This confirms accuracy of claim that employing responsible people in the crisis office of the city has considerable effect on the functionality of research. Given the calculated correlation coefficient ($r=0.35$, $p < 0.01$), the null hypothesis is rejected and the alternative one confirms so that at the confidence level of 99% it concludes that given the risk of flooding in the city of Shirvan, no correct positioning has been done for the city. Based on Pearson correlation test, the test results showed a positive and significant relationship there exist between correct positioning given being faced with the flood risk and the situation of passive defense. In other words, whatever positioning is better with respect to the risk of flooding in the city of Shirvan, the passive defense would be better. Since $f_{(277,2)} = 6.64$ and $p < 0.01$, at the confidence level of 99% it concludes that the null hypothesis rejects and the alternative one confirms and thus there is positive significant relationship between passive defense with respect to the type of their liability. The results of post hoc tests showed that there is significant difference between vice presidents and experts with those who did not specify their responsibility ($p < 0.01$). Since ($f_{(277,2)} = 11.27$ and $p < 0.01$), at the confidence level of 99% it concludes that the null hypothesis rejects and the alternative one confirms and concludes that there is significant difference between passive defense and the age of employees. According to the results, there is significant difference between efficiency of employees with the age of 30-40, 20-30 and those with more than 40

years old ($p < 0.01$). Since ($f_{(277,2)} = 3.43$ and $p < 0.01$), at the confidence level of 99% it concludes that the null hypothesis rejects and the alternative one confirms. Thus, it concludes that there is significant difference between passive defense and the education of employees. The highest productivity relates to employees with a graduate degree and lowest productivity relates to those with diploma. The results of post hoc tests showed that the passive defense of those who had a Bachelor's degree differs with that of those with diploma and graduate degree ($p < 0.01$). Of the 120 manager, vice presidents and experts examined here, it concludes that with regard to the flood risk for the city of Shirvan, no correct positioning has been done for the city so that the correct answer to all the above questions has been more than 61% and overall 70.7% of answers given to these questions were correct. The lowest awareness of employees of the relationship of the correct positioning due to risk of floods has been with a frequency of 60% and the most awareness with respect to the concept of passive defense has been with a frequency of 83%.

Conclusions

Consideration of safety section, given the importance of this section in the protection and preservation of the industrial and service achievements and different organizations of Shirvan, is of great importance in reducing damages caused by the lack of meeting strict guidelines in the field of passive defense. The lack of development of strategies for the passive defense in the field of information technology and different sectors and organizations is very important in the creation of damages to the computer and information networks as well as in the reduction of the level of computer security in the city. It is necessary that in the development of the spatial planning map to give more attention to the various scientific and professional courses as well as the growth in the area of crisis management in

the future, especially passive defense in the city. Substantial attention to the most important growth source of passive defense plans, i.e. increasing the readiness of the city in various sections and providing the bed for its growth in terms of long terms of economic, political, social and cultural plans, can be very effective in the development of passive defense and reducing and security in different parts of the state can be passive defense. Increasing the city's share of the specific security and defense credits of passive defense in different sections of the government is a key factor in the development of passive defense in this city. Expanding the quality of in-service educations can be one of the most important factors in improving the knowledge level and professional awareness of managers and experts in the city. Government agencies have the most important role in enhancing the performance of passive defense and increasing managerial productivity in the crisis sector of the city. Demographic factors of experts and managers such as gender, education level, field of study etc. in the implementation of passive defense is effective only in the specific areas and lacks general dimension. Social and cultural infrastructures of the city are effective in increasing the participation rate of managers and experts in the design and development of passive defense in the city of Shirvan. It is obvious that managers cannot be prepared for confronting with any kinds of crisis. However, if they believe in crisis management as an integral part of their strategic management responsibility, the probability that their organizations be faced with crises would considerably decrease. So, consideration of crisis management and its relation with the technical and operational planning is very important.

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