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Evaluation of Connective Status and Accessibility of Official Buildings to Plan and Manage Urban Crisis in Isfahan

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ABSTRACT: One of the issues that most cities across the world are faced with is natural disasters. Natural hazards and their devastating effects remain on the ground, especially in recent years, the countries have been about to reduce the damage caused to it to plan and manage their events. Administrative units could have an important role as one of the elements before, during, and after the crisis. In this study, connective status and building accessibility in the offices of region 5 in Isfahan were studied, including Telecommunication Organizations, Fire Stations, Electricity Companies, municipalities, Education Ministry, and Gas Companies. Heretofore, there was no study of the connective status and accessibility of the office buildings in Esfahan. This research is a descriptive and analytical survey. The required information was evaluated and weighed by six indices, including the questionnaire, field collecting method, and A.H.P. measures. The results indicated that among administrative centers in terms of the degree of connectivity and accessibility, administrative codes 6 and 17, with weights of 0.03% and 0.031% were the most accessible, and administrative codes 14, 8, 9, 10, and 11 with weights of 0.07%, 0.067% were the most inaccessible.

Keywords: *Planning, Connective Status, Accessibility, Crisis Management, Isfahan.*

INTRODUCTION

Natural disasters are the practical act of nature with such severity that they create a catastrophic situations. In this situation, daily life is suddenly broken, and people suffer and helplessness. Finally, the suffering people need food, clothing, shelter, medical care, nursing, and other necessities of life and protection against unfavorable environmental factors and conditions (Abdullahi, 2003). Natural hazards include earthquakes, volcanoes, droughts, floods, and hurricanes. Sometimes, these hazards are common in terms of origin between humans and the natural environment (Smith, 2003, 1).

Natural disasters are considered one of the major problems throughout the world. A crisis is a sudden event that threatens lives and causes widespread material damage that requires urgent measures. These natural events that lead to the critical situation in society are, at least potentially, and often dangerous, destructive, and fatal (Taghvaei et al., 2014). Natural disasters (especially earthquakes) are most off and, at the same time, have the potential to create injury (Shakiba, 2008, 100). Average annual victims were more than 150.000 human losses and more than 140 billion dollars of financial losses in countries, especially in developing countries (Red Crescent Message, 2006).

Knowledge of urban crisis management is a collection of activities that before, during, and after a crisis leads to a decrease in the effects of the accidents and injury of performance. The issue has a special relationship with discussions of urban planning, management city, and geography (Taghvaei & Rahmani, 2017).

Urban safety and security have long been considered in the planning of urban settlements from a long time ago, and planners have always paid attention to this important issue in the construction and design of urban areas. One of the most important components of this planning has been to pay attention to the location of uses, especially sensitive and vital uses. Therefore, with the correct location of urban land uses, their vulnerability in times of crisis (human and natural) is greatly reduced, and their management should be done easily (Farzam-Shad, 2011).

Lack of attention to the correct location of cities, growth, and development, as well as the lack of necessary planning to prevent the unbridled growth of cities, caused many problems for the safety of cities. This development led to the construction of cities on the main routes of faults or rivers and canals; therefore, natural disasters know no boundaries and operate on

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a large scale, and possibly if the occurrence of some of them, such as earthquakes in If it happens far away from the city, its effects on the city will cause much damage (Abdullahi, 2011).

The city connective network played a critical role in the city's vulnerability. Closing one main or minor road multiplies the damages caused by earthquakes several times, and returning it to normal would be delayed by days and even months. Therefore, the possibility of service, rescue, and evacuation of texture must be characteristic of urban streets (Qadiri, 2002).

The main axes in the city were the most sensitive elements of the physical structure that play a role in a given period, especially in evacuation, rescue, and delivery of relief material and equipment needed for the refugees. The characteristics of natural axes substrate in terms of impact on a smooth slope and maze path eventually make the easy and difficult movement of the rescue forces, equipment, and machinery and is considered in the assessment and efficiency of traffic axes. Physical properties of paths such as the width of the streets, floors' material, division of way by canals, refuse, green space, and the availability of facilities are effective in moving axes. Road patterns and a plurality of intersections as an alternative will be important in case of obstruction of the passages (Zu-Eshtiagh, 1998, 16).

Vulnerability assessment due to road accessibility is based on how to reach different areas for relief and rescue in an earthquake. The higher the width road is and the higher the hierarchy, the lower the vulnerability will be (Azizi et al., 2022). The intention of accessibility is how to reach different areas

At the time of earthquake occurrence, aid and rescue were intended in the initial 72 hours (Hatami-Nezhad et al., 2009).

The study was conducted on the importance of crisis management knowledge and its emphasis on crisis in office buildings of district 5 in Isfahan and the accessibility of buildings to assess the vulnerability status of these buildings in the event of a disaster. Thus, the analysis and evaluation of office buildings in these areas were addressed to provide guidelines and recommendations to reduce the vulnerability of buildings in terms of connective status and accessibility criteria.

Due to its geographical location and climate diversity, Iran is known as one of the most affected countries in the world by natural disasters. Various floods, earthquakes, storms, and droughts. Caused many human and financial losses in this country. On the one hand, approximately 86% of Iran's soil is in earthquake-prone areas. On the other hand, a large part of the gross national product is spent on compensating for the damages caused by natural disasters (Hamedani & Rajabi, 2022).

Natural disasters such as floods, earthquakes, and storms have occurred in the last few decades. Had more destructive effects on human settlements than before, as well as heavy loss of life and property to their residents. In other words, despite numerous scientific advances, humankind cannot resist these natural events and prevent their dangers, so almost no place on earth and no city can be found safe from various crises (Sadeghi et al., 2021).

Humans have been involved with natural forces and disasters such as earthquakes and have suffered many injuries. In today's era, one of the most important and general phenomena in the world is the increase in population. The consequent growth of urbanization and the physical development of cities which are generally accompanied by unmeasured human interventions in the natural environment, showed indiscriminate constructions in the boundaries of faults, the absence or neglect of the construction rules and standards, and many other factors that caused the threat of natural disasters and intensified the occurrence of those crises or human disasters.

Considering the country's location in one of the world's most dangerous zones, and a continuous confrontation with crisis-causing phenomena, it is always necessary to achieve practical methods and coherent solutions to confront and minimize the rational dimensions of such catastrophic events. Crises cause many losses and casualties. However, it is possible to reduce the damage to the minimum by creating the necessary predictions, making decisions and preparations before the crisis, properly directing the facilities after its occurrence, and making decisions based on information (Alimoradi & Mahdaveipour, 2016).

In 1990, the first international crisis management association was established. In 1991, with the cooperation of the Federal Crisis Management Organization and the National Crisis Management Coordination Council, the American Crisis Management Association formed a crisis management committee to derive and approve crisis management standards. (Mahdavi & Jafari-fesharaki, 2021).

Since most events happen suddenly, it is necessary to make the right decision at the right time (Darban-Astaneh et al., 2017).

We can mention natural, physical, social, and management factors. These factors, considering that vulnerability and the issue of crisis management are important needs of human societies, that to correctly face disasters and respond to them, according to global standards, it is inevitable to learn the knowledge of crisis management and institutionalize it in the scientific and executive systems (Ehsan-Dost & Arianpour, 2018).

According to Pearson and Claire's theory, crisis management is a systematic effort by the organization's members and stakeholders outside the organization to prevent crises or manage them effectively when they occur.

Crisis management is formed through stages called the crisis management cycle. These steps are presented to model the activities that include an easier activity to express and understand the different stages of crisis management in a simpler and more selective holistic view. (Rashid-Kalvir, 2019)

Natural crises occur naturally and impose difficulty and

hardship on human society; basic and extraordinary measures are needed to solve them.

A crisis is an incident that occurs naturally or by humans (artificially), suddenly or incrementally, that requires action to solve it. A crisis is an incident, event, or phenomenon that prevents the system from functioning properly; that is, it disables the regular movement of an organization, group, city, or the like and causes a delay in the process of implementing the activities, missions, and goals of the system (Azizi et al., 2022).

A man started planning to choose a better life and the best factors to improve his life. It should be noted that humans have always dealt with the most common realities of their lives, i.e., environmental crises, with carelessness. Accordingly, they have suffered much human and economic damage (Naseri-Pour et al., 2022).

Natural crises are complex phenomena that involve different institutions dealing with them, and the readiness and speed of action of such institutions are essential in reducing the damages of disasters (Khalili & Soroush, 2019). (Fig 1).

Fig.1: Crisis Management Cycle (Rashid-Kalvir, 2019).

Research Domain

District 5 of Isfahan municipality is one of fourteen districts of the municipality, which had an area of 1549.2 hectares, and by calculating military lands, its area reached 2016.7 hectares. The population of this district was 142000 subjects, and the concentration (person per hectare) was equal to 70. District 5 was limited to Boustan Mellat Avenue from the

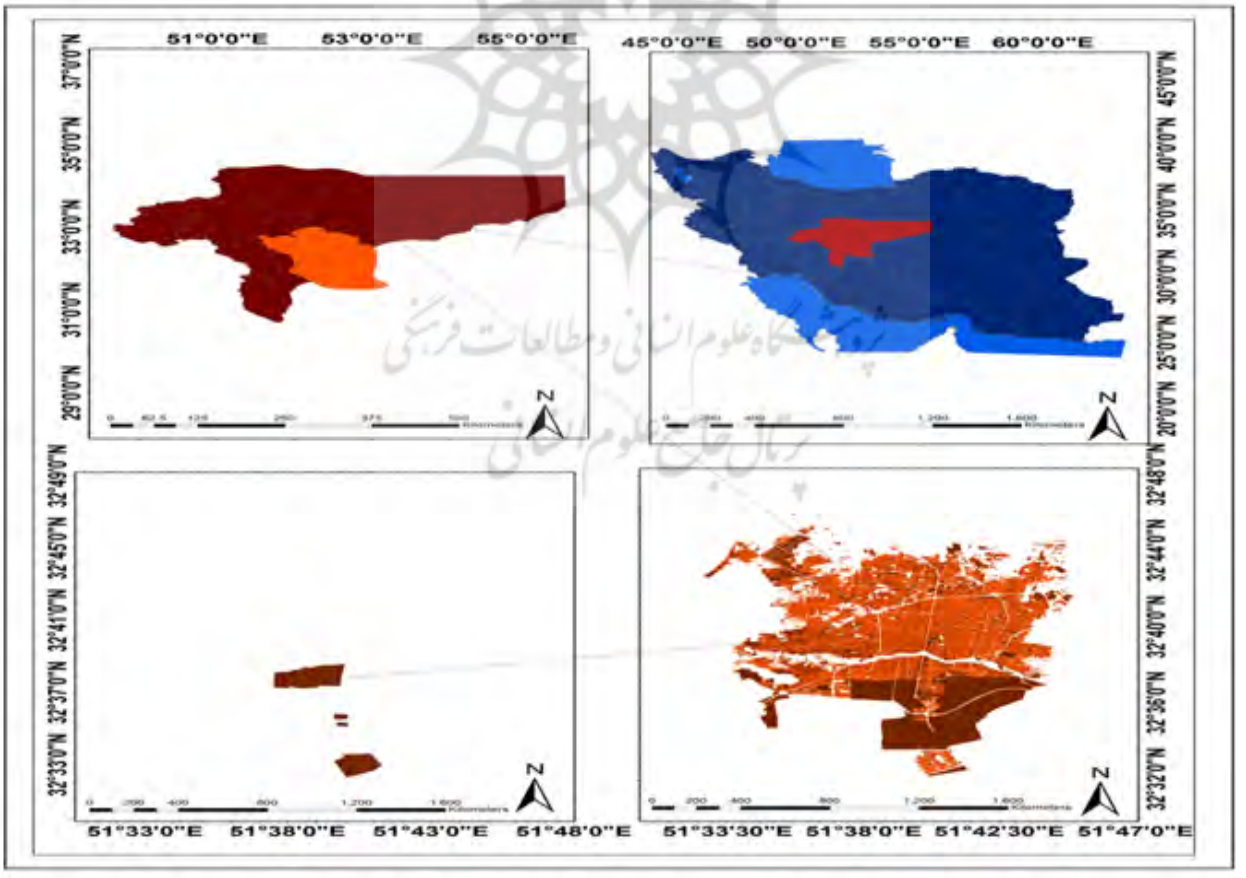

Fig.2: The map of Isfahan province in the political divisions of the country and the studied region in the city of Isfahan

north, Shahid Agharebparast Highway, Chaharbagh Bala, and Hezarjerib Avenues from the east, Habiballahi Avenue from the northwest, and Shahid Meisami Avenue from the west. (Isfahan Governorate, 2008, 26-38). (Fig 2).

The Importance and Necessity of Research

The importance of the present research is that no study has been conducted to evaluate the communication status and access of the office buildings in district 5 of Isfahan. Therefore, the present research can be useful and important for city managers and their decisions. The research findings can be used to organize and improve the communication and accessibility of administrative buildings in district 5 of Isfahan city. In addition, the current research results, which have been obtained using field observations and research activities, try to provide logical suggestions to reduce the crisis of administrative buildings in district 5 of Isfahan.

MATERIALS AND METHODS

The present research was descriptive-analytic, and the data collection method was a survey; required information was gathered by providing and completing the questionnaires. Statistical society was all offices in district 5 in Isfahan city, including the gas department, water and wastewater organization, municipality, and others. Data analysis was conducted using A.H.P., and measures were evaluated and weighted.

- Theoretical Foundations: Definitions and Concepts

Communication and accessibility status of office buildings requires a general familiarity with the concepts of this approach, which are as follows:

- The Concept of Natural Disasters.

It is created against human beings' will, desire, determination, thought, and action, such as floods, earthquakes, volcanoes, lightning, and unknown diseases. (Davarpour, 2007).

-The Origin of Crisis Concept

According to the definition provided by the ISDR in 2003, a crisis is a serious disorder that occurs in the functioning of a society and causes such great damage to the lives and property of individuals, the economy, and the environment that the crisis-stricken society singly cannot compensate for the damage caused. Given the adverse effects of the crisis on society, the economy, and the environment, crisis management has always been on the agenda of governments (Mobaraki et al., 2009).

-Crisis Management

In the scientific definition, firstly, crisis management is considered a systematic knowledge and process to prevent accidents; secondly, to deal with them if they occur and to reduce their effects; and thirdly, after the crisis subsides, to rebuild (Pourmohamad & Houshmand-Marvasti, 2014).

In this way, integrated crisis management can be defined as:

- To institutionalize crisis management and create capable management in disasters.
- Internal and external coordination in the management system and disasters.
- To upgrade the specialized knowledge of executive managers in the field of theoretical, educational, and research topics of crisis management by providing enough information to the managers and upgrading their knowledge.
- To present plans and bills and propose the approval of laws required in disaster management, general and specialized notification in the prevention and response to accidents and disasters.
- To prepare executive instructions for crisis management in the field of health, treatment of accidents and disasters.
- To assess the potential risks and ways to prevent accidents and disasters.
- To prepare the community for dealing with emergencies.
- To transfer experiences and critique and review the performance of the country's crisis management system in national crisis events (Taghvaei & Rahmani, 2017).

-Building

The building is normally an enclosed, roofed, and fixed space with one or more entrances to public thoroughfares from foundation to ceiling with complete independence that is separated from the surrounding spaces by a wall and is used for residential or commercial and administrative activities (Iran's National Building Regulations Office (the third issue of building protection against fire, 2016, 3).

-Administration: Each of the government institutions and their branches (Harris, 2006, 19).

Administrative Units: Administrative units are all government buildings and the Islamic Revolution Institutions (Kamyar, 2006, 282).

Office Building: A building used for professional or office affairs, and no part of it is residential, except the caretaker's house (Harris, 2006, 66).

-Door

The door is said to be a part of the building for opening and closing various external spaces related to each other or separating them. The accessibility, light, and air conditioner are sometimes possible or impossible. Thus, the door will be a temporary wall on the port that can be opened to provide access for privacy and safety (Maghsoudi, 2007, 3).

-Emergency Exits

Continuous and unobstructed path for exiting the building during a fire (Harris, 2006, 58).

-Urban Context

The urban context is the city's size, shape, and structure consisting of the smallest components that can be expected to have specific resistances against natural disasters depending on the type of urban context. This is because of how to combine the smallest components of implications. The city is regular context more resistant to irregular context. Adding a discrete context safety against the risk of natural disasters is expected

to be higher than the continuous context safety. It is noteworthy that the reaction of the urban context type in the situation of a disaster, natural ability to escape and seek refuge with the possibility of forming outreach and assistance force or how to clean and restore the direct influence and even temporary housing (Hashemi & Hashemi, 2012).

-Avenue

Any outdoor public traffic, including alleys, streets, or boulevards, is at least 9 meters wide and is designed to ensure the possibility of using fire to provide firefighting units. Although the passages in the closed spaces and tunnels were used for general traffic, the car is not included in the street (Iran's National Building Regulations Office (the third issue of building protection against fire, 2016, 4).

-Deadlock

It is usually a narrow dead-end pathway with a length not so much that only one of the ends is open (Pakzad, 2005, 244).

-Escape Stairs

In all six-story buildings and more, in addition to the entrance stairs, anticipating escape stairs is directly related to outdoor buildings.

-Escalator

It is a kind of elevator that works with mechanical and electrical systems. Escalators usually are fabricated and easily used on special occasions, such as stores and large multi-story subway stations and passenger terminals, for transporting large numbers of passengers between classes with appropriate speed. The escalators' width is about 60 cm to cross one person and 80 cm for two subjects. Escalators with different widths and speeds make tilt angles that are usually 30 escalators, floor stairs with a width of 40 cm and a width of one meter stepping up to 60%. (De Almeida et al., 2012)

-Elevator

A device consisting of cabins, usually counterweight, and other components with different methods of passengers (subjects) or cargo and both types on the path between floors of the building (Iran's National Building Regulations Office (the third issue of building protection against fire, 2016, 16).

-Closeness Stage

The degree of closeness is a very important variable in assessing vulnerability (Shiee, 2010, 4).

Mismatch of street width with the context density of buildings or, in other words, inappropriate closeness in pathways and urban spaces are other difficult issues or even failure of relief operations in many population centers (Hosseini, 2006).

Some factors that can reduce vulnerabilities of passage networks are as follows:

- The lower the height of the walls of the passages, the more vulnerability of the pathway will reduce. It is clear that in case of damage to surrounding buildings' corridors, high altitude may cause more debris on the road surface.
- The better the quality of passages' adjacent buildings, the less vulnerability of the pathway will be reduced. Therefore, the structural quality of passages' adjacent buildings has a two-fold effect
- The lower the length of the road, its vulnerability will be reduced;
- The passed distance between different uses is shorter.
- Connective status between general uses over a network to be established following the land use type.
- Networks provide the possibility of escape and evacuation.
- The percentage of traffic nodes is lower on the network.
- The important uses are connected via instant access (Zu-Eshtiagh, 1998, 16). (Table 1).

What is important in the design of the entrance doors of office buildings is that the door is designed to meet the expectations expected from it about the office entrance, including that it is proportional to the dimensions of the office building. Its width and height should be enough for human factors and administrative means to enter and exit it easily and can be designed to adapt to the office space and communicate with the environment. The doors in these buildings differ from those of residential, medical, and industrial. In more private spaces, like the room of the general director or the head of the organization, ., the door should be placed in a direction that limits access and visibility to the private space. In addition, the door in office buildings should have sufficient resistance against accidents, and its placement frame should be able to maintain its position and establishment. The amount of human density in using doors should be considered, especially in critical conditions such as earthquakes, fires, . Fireproof doors can be used to prevent the loss of important administrative documents and documents (Adampour, 2008).

- There are two types of views in the field of crisis management

Table 1: Relationship between vulnerability and hierarchy of urban street network (Mohammadi-Ahmadiani et al., 2010)

The width of the passage network	Vulnerability
Passages with a width of over 14 meters	Low vulnerability
Passages with a width of more than 9 to 14 meterS	Moderate vulnerability
Passages with a width of more than 6 to 9 meters	High Vulnerability
Passages with a width of 6 meters and lower and the deadlocks	Very high vulnerability

which include the following:

Traditional or crisis-oriented view: In this view, which has a fateful view on the issue of accidents, governments and people consider the occurrence of accidents as normal and providential and submit to the possible conditions of accidents. Such communities wait for accidents to occur and, if they do occur, try to deal with them. Therefore, by emphasizing the accepted frameworks in crisis management, this view suffices for a set of measures after the occurrence of accidents (Abdullahi, 2011).

Modern or preventive view: This view tries to deal with possible accidents by mobilizing facilities and equipment and preparing society by accepting the occurrence of accidents. This theoretical framework considers "living with events" and planning to deal with them an accepted principle. Therefore, the government, planners, and accident managers try to carry out premeditated activities to deal with possible accidents. This view is risk-oriented, tries to reduce the risks of accidents and unforeseen events in the living environments of the community, and is focused on pre-crisis planning. However, it also considers the set of activities during and after the occurrence of possible accidents (Abdullahi, 2011).

At present, accident planners and managers in many countries seriously consider the modern perspective, and such countries' future orientation and strategy in disaster crisis management are adjusted on this basis and carefully followed and implemented. In the framework of the above perspectives, the cycle of crisis management elements must be carefully identified to achieve a comprehensive crisis management system. Then, he planned and made policies for different stages of this cycle. Thus, the time stages before the crisis, the beginning of the crisis, during the crisis, and after the crisis should be considered (Abdullahi, 2011).

- Technique and Method

-Analytic Hierarchy Process Technique

This method was invented by Thomas in 1980. A.H.P. (Analytic Hierarchy Process) is one of the reliable and strong techniques in multi-criteria decision-making. This technique allows us to compare indicators in pairs and measure their score compared to only one indicator to achieve a total score for each indicator (Sharifzadegan & Fathi, 2005). This technique also helps the planner choose one of the most suitable options for solving the problems (Taghvaei & Kiomarsi, 2013, 123).

Creating Hierarchy:

The two-by-two comparison of criteria in the hierarchical analysis process is such that in the case of paired comparison, a weight from 1 to 9 is considered for each criterion that is more important according to the objective being investigated (Table 2). In the opposite case, i.e., criterion 1 is less important than criterion 2, the weight assigned to each criterion will be different 1/2 to1/9.

RESULTS AND DISCUSSION

-Vulnerability in time of Crisis (Stages of Using Analytical Hierarchy Process):

First Stage: Setting Objectives

The research aimed to stage the official buildings of district 5 in Isfahan city regarding the vulnerability of their connective and accessibility status during a crisis.

Second stage: Choosing Studied Measures and Sub-measures

In this stage, some measures and sub-measures are considered to evaluate the status of connective and accessibility of official buildings in district 5 in Isfahan city. The last criterion weight will be obtained by comparing them in pairs, and centers will be evaluated. As in the present research, evaluated sub-criteria had a series of factors for evaluating centers; the A.H.P. model of this research had four stages. In Stage 3, sub-criteria from Stage 2 were evaluated, and centers or alternatives evaluated in Stage 4.

After obtaining the final weight for each sub-criterion of sub-criterion for official buildings of district 5 in Isfahan city, according to features, which were identified after field studies, the total number of offices in District 5, which are 17 offices, was evaluated by forming a 17×17 Matrix of each office against other ones regarding indicators of connective and accessibility. The weights of all offices were obtained, but they were ignored to be inserted in the article due to their high volume of statistical pages. Conclusively, the final analysis of each evaluated office was conducted regarding criteria of the entrance door (Fig 3), emergency doors (Fig 4), escape stairs (Fig 5), the width of passages (Fig 6), elevators (Fig 7), and style of the urban context (Fig 8).

The weight of each criterion was obtained using calculations of the codes of offices as follows:

Fig. 24: Comfort mean gliding temp & operative temp (EN 15251, 2007)

Degree of importance	Strongly preferred	Very preferred to strongly preferred	Very preferred	Strong to very strong	Strong	Medium to strong	Medium	Medium to equal	Equal
Score	9	8	7	6	5	4	3	2	1

Table 1: Relationship between vulnerability and hierarchy of urban street network (Mohammadi-Ahmadiani et al., 2010)

Criteria	Weight	Sub-criteria	Sub-criteria	Weight	Final weight
Accessibility	0.262	Urban texture type	New	0.055	0.004032
			Old	0.565	0.0041415
			Historical- artistic	0.262	0.0019202
			Others		
		Entrance door	One	0.118	0.008649
			Two	0.637	0.0236989
			Three and more	0.258	0.0095986
			No door	0.105	0.0039064
		Emergency door	One door	0.637	0.073934
			More than one door	0.258	0.029945
			One step	0.105	0.0121869
		Scape door	Two steps	0.258	0.0177102
			No step	0.105	0.0072076
		Elevator	With elevator	0.637	0.0437262
			No elevator	0.2	0.002358
		Passages width	m and more 20	0.8	0.009432
			m 8-20	0.105	0.0021733
			Less than 8 m	0.258	0.0053401
				0.637	0.0131846

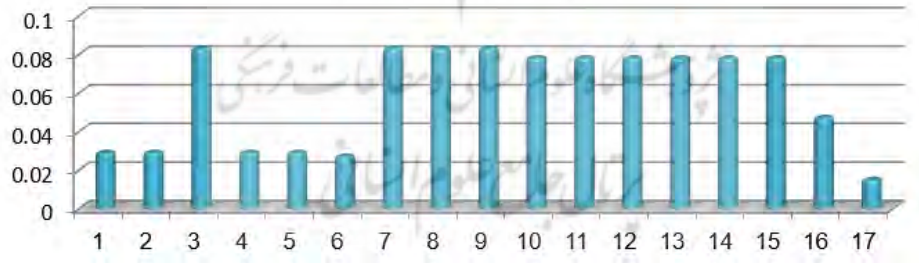

Fig. 3: Vulnerability rate of offices in district 5 of Isfahan city in terms of the entrance door

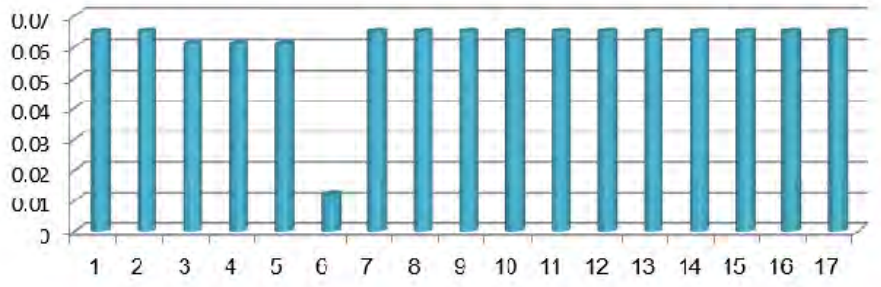

Fig. 4: Vulnerability rate of offices in district 5 of Isfahan city in terms of emergency doors

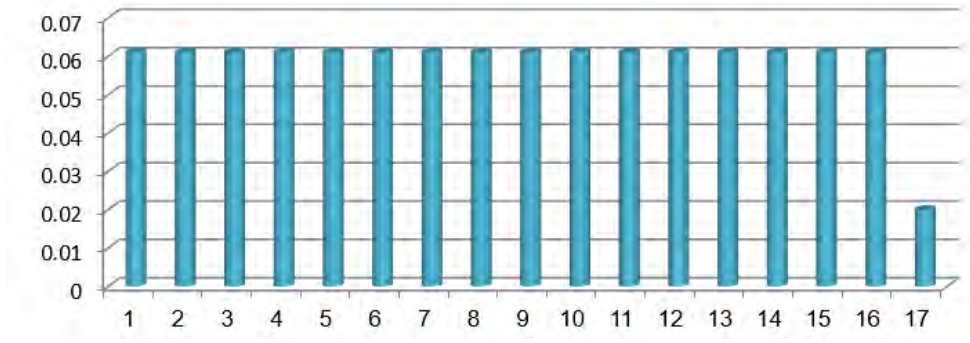

Fig. 5: Vulnerability rate of offices in district 5 of Isfahan city in terms of escape stairs

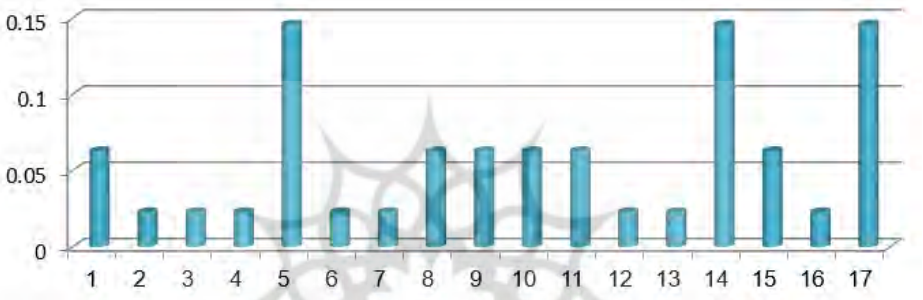

Fig. 6: Vulnerability rate of offices in district 5 of Isfahan city in terms of the width of passages

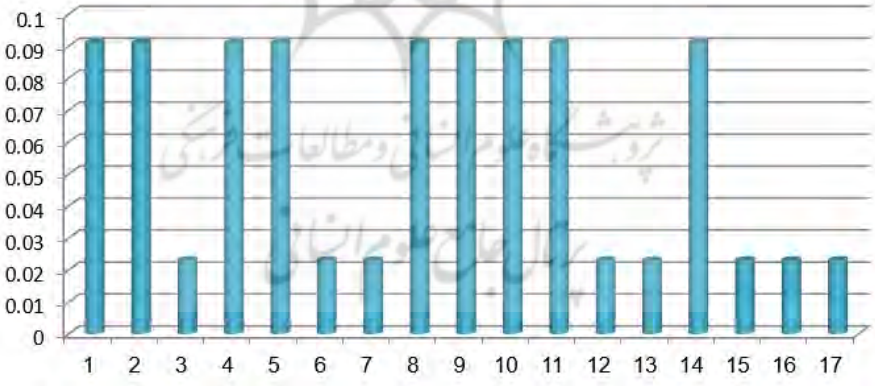

Fig. 7: Vulnerability rate of offices in district 5 of Isfahan city in terms of elevators

Telecommunication: code 1. Municipality building No. 1: code 2. Municipality building No. 2: code 3. Municipality building No. 3: code 4. Water and Wastewater organization: code 5. The gas office: code 6. Governor Office: code 7. Education Office: code 8. The organization of industry and mine: code 9. The organization of accounting for the ministry of economics and properties: code 10, the housing foundation of Islamic Revolution: code 11; the center of blood donation: code 12, organization of social security: code 13, the registered office: code 14; the registered office of documents and properties: code 15, southwestern electricity affairs: code 16, firefighting station: code 17. (Table 4).

The obtained results of analyzing data are shown below:

The results indicated that the criterion of the entrance door in the administrative centers with codes 17 and 6 with weights of 0.015% and 0.027% are most accessible, and administrative

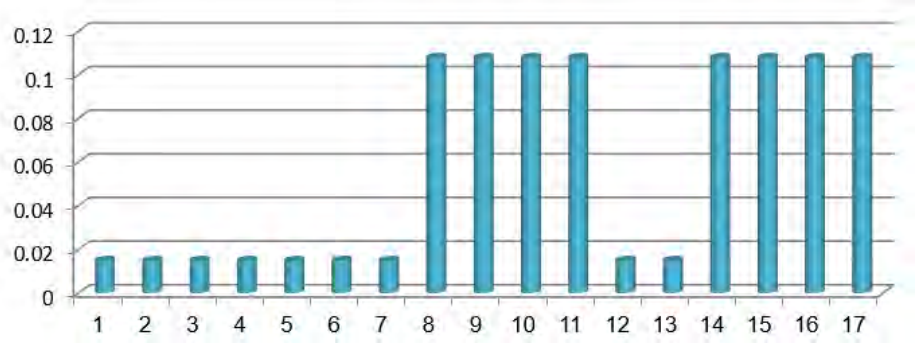

Fig. 8: Vulnerability rate of offices in district 5 of Isfahan city in terms of style of the urban context

Table 4: Final scores of connective and accessibility statuses for offices in district 5 of Isfahan city

Office code	Total scores	Office code	Total scores
1	059%	10	067%
2	058%	11	067%
3	060%	12	061%
4	056%	13	061%
5	061%	14	070%
6	030%	15	064%
7	062%	16	059%
8	067%	17	031%
9	067%	-	-

codes 3, 7, 8, and 9 with the same weight of 0.083% were the most inaccessible (Fig 3).

The results indicated that the criterion of emergency doors in the administrative center with Code 6, with a weight of 0.012%, was the most accessible, and the buildings with weights from 0.061% to 0.065% were the most inaccessible (Fig 4).

The results indicated that the criterion of escape stairs to the office with code 17 and a weight of 0.02% was the most accessible, and another office with a weight of 0.061% was the most inaccessible (Fig 5).

The results indicated that the standard width of passages in the administrative centers in the offices of codes 5, 14, and 17 with the same weight of 0.146% was the most inaccessible and, in other departments slightly accessible (Fig 6).

The results indicate that terms of standard elevators in office administrative with codes 17, 16, 15, 13, 12, 7, 6, and 3 with a weight of 0.023% were the most accessible, and others had little accessibility (Fig 7).

The results indicated that the standard style of the urban context in administrative offices with Code 1, 2, 3, 4, 5, 6, 7, 12, and 13 with the same weight of 0.015% was the most accessible, and other agencies with the same weight of 0.108% were the most inaccessible (Fig 8).

The results indicated that in terms of the overall measure of connective status between administrative centers with codes 6 and 17 with weights of 0.03%, 0.031% were the most accessible those with codes 14, 8, 9, 10, and 11 with weights of 0.07%, 0.067% most were the most inaccessible (Fig 9).

CONCLUSION

Given that Iran in the Middle East is prone to earthquakes and unexpected natural disasters, the comprehensive crisis management plan to reduce the risks and caused damages is the most essential. As one of the city's necessary dynamic buildings, administrative units play an important role. Given the importance of crisis management knowledge and connective emphasis on the accessibility of office buildings in district 5 of Esfahan, assessing the vulnerability of these buildings was

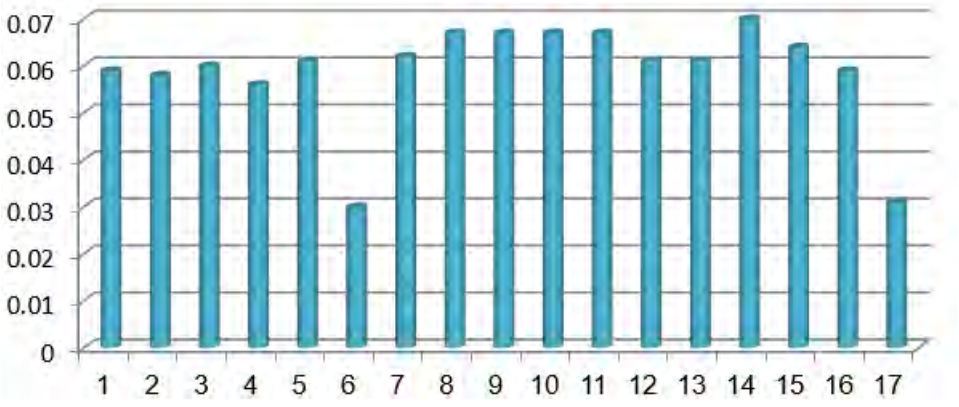

Fig. 9: Vulnerability rate of connective and accessibility status of offices in district 5 of Isfahan city

developed in times of crisis. What was followed in this study was to analyze the connective and accessibility status in office buildings in district 5 of Isfahan. Predict future status of these buildings required data and accurate and up-to-date statistical information and, questionnaire and field data action to collect data at the use stage of offices in Esfahan and enjoying the time of evaluating the measures and then the following results were obtained:

-The results indicated that the criterion of the entrance door in the administrative centers with Codes 17 and 6, with weights of 0.015% and 0.027% were the most accessible, administrative codes 3, 7, 8, and 9, with the same weight of 0.083% were the most inaccessible.

-The results indicated that the criterion of emergency doors in the administrative center with Code 6 with a weight of 0.012% was the most accessible, and those with weights from 0.061% to 0.065% were the most inaccessible.

-The results indicated that the criterion of escape stairs to the office with code 17 and a weight of 0.02% is the most accessible, and another office with a weight of 0.061% was the most inaccessible.

-The results indicated that the standard width of passages in the administrative centers in the offices of Code 5, 14, and 17 with the same weight of 0.146% was the most inaccessible and in other departments are slightly accessible.

-The results indicated that in terms of standard elevators, the administrative office with codes 17, 16, 15, 13, 12, 7, 6, and 3, with a weight of 0.023%, was the most accessible, and others had little accessibility.

-The results indicated that the standard style of the urban context in administrative offices with Code 1, 2, 3, 4, 5, 6, 7, 12, and 13 with the same weight of 0.015% was the most accessible, and other agencies with the same weight of 0.108% were the most inaccessible.

-The results indicated that in terms of the overall measure of connective status among administrative centers with codes 6 and 17 with weights of 0.03%, 0.031% were the most accessible those with Codes 14, 8, 9, 10, and 11 with weights of 0.07%, 0.067% most were the most inaccessible. In the following discussion, results are given to improve the work process:

Necessary programs and strategies to deal with potential crises to reduce the vulnerability of office buildings in terms of connective status with the executive courses have been proposed as follows:

Renewing old contexts has been suggested for a short period.

To widen the narrow passages in dense urban contexts, firefighting vehicles to facilitate travel has been proposed for the middle term.

For the construction of office buildings, it has been considered enough space to escape easily from the accessible place during the crisis. The time recommended is the long term.

Connective status and the accessibility of office buildings in terms of providing timely getaway, thereby reducing the initial losses when they occur and the ease of access to victims and the next event is very important to reduce losses, so a long construction of new office buildings must be taken that the position of the building across the street proportionate with necessary standards and possible office building are in main pathways. In addition, due to meeting the technical principles and urbanization in developing a style of the new context, it should be recommended for the long term.

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CONFLICT OF INTERESt

We, as authors, declare no potential conflict of interest regarding the publication of this work. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication or falsification, double publication and, or submission, and redundancy, have been completely witnessed by the authors.

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