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Investigating the Indicators and Components of the Institutional Resilience Approach in Urban Incident Management in Iran

Morteza Moradipour[1], Bahman Kargar[2], Parvaneh Zivyar[3]

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Abstract

INTRODUCTION: Paying attention to different dimensions of resilience is one of the main goals of sustainable development, especially in cities and urban communities with potential risks, and institutional resilience as one of the dimensions of resilience is an important approach to strengthening communities and cities.

METHODS: This applied research was conducted based on a descriptive-analytical design. The VIKOR method which is a fuzzy multi-criteria decision-making technique was used for analysis. Library and documentary methods were used to collect data and the data collection tool was a seven-7-item questionnaire.

FINDINGS: Based on the findings, the organizational structure and the experience of previous incidents held the first and last places. preparedness policies, manager's effectiveness in prevention, the effectiveness of training, incidence experiences in resource needs assessment, and the impact of financial resources ranked the first in the following sections: organizational structure, education, leadership, the experience of previous disasters, and capacity, respectively.

CONCLUSION: As evidenced by the results of this study, each of the indicators found in this study had an important role to play in the management of urban incidents in the country. Therefore, their management is of paramount importance in the achievement of sustainable urban development in the country.

Keywords: Final approach to resilience; Institutional resilience; Iran; Management; Resilience; Urban disaster management.

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Introduction

According to the United Nations forecast, it is likely that by 2050, nearly 80% of the world's population will be living in cities, aggravating the problems of cities (1& 2). In other words, cities are important centers of modern societies that will be doubly important in the future. Today, more than half of the world's population live in urban areas, one-eighth of whom live in metropolitan areas, and about half reside in urban settlements with less than 500,000 inhabitants. According to UN estimates, by 2045, the population of cities will increase by 1.5 times to 6 billion. Not only people are gathered in cities (residents, travelers, and tourists), but the same is true for infrastructure, which is more important than municipalities and often national borders. These infrastructures include transportation, telecommunications, energy network, as well as educational and medical centers. More than 80% of global economic returns are generated in cities (3); as a result, the vulnerability of cities is felt everywhere in human life, from infrastructure and buildings to urban facilities and services. Therefore, natural

1- PhD Student in Geography, Yadegar-e-Imam Khomeini (RAH) Shahre Rey Branch, Islamic Azad University, Tehran, Iran
2- Faculty member of Amin Police Academy, AND Yadegar-e-Imam Khomeini (RAH) Shahre Rey Branch, Islamic Azad University, Tehran, Iran
3-Associate Professor of Geography Department, Yadegar-e-Imam Khomeini (RAH) Shahre Rey Branch, Islamic Azad University, Tehran, Iran
Correspondence to: Bahman Kargar, Email: b.kargar@yahoo.com

disasters are considered a major challenge to the achievement of sustainable development of human societies (4). Apart from the elevation in natural disasters over the past decades, the increase in casualties has been due to the increasing vulnerability of urban communities (5).

Given the importance of the issue, if proper scientific and operational management is not available in dealing with unforeseen events, the human damage caused by disasters will be multiplied. Deficiencies in technical knowledge have always been a weakness of management in a crisis. In the meanwhile, weakness in planning, organization, coordination, leadership, control, and empowerment are the key causes of failure to achieve predetermined goals (6). Nevertheless, risk mitigation policies and measures are implemented for two purposes: 1. empowering the community to withstand risks, while development activities do not increase the vulnerability of the community to risks. 2. Common risk reduction plans and programs have focused on the stability and resilience of physical systems (7).

By the end of 2010, eight of the ten largest cities in the world were in developing or less developed countries, and disasters in these metropolises could cause extensive damage and casualties. From global, Asian, and national perspectives, the high-risk geographical location of Iran makes the country's disaster management system use its past experiences and global experiences to develop effective disaster planning (8).

According to a report by the United Nations Development Program in 2004, Iran has had the highest number of annual deaths due to earthquakes in the world in the last 12 years. The same report stated that the Islamic Republic of Iran is one of the 15 most incident-prone countries in the world. The occurrence of 36 types of disasters out of 46 types of natural disasters known in the world such as numerous earthquakes and other disasters in Iran indicates that it can be considered one of the most disaster-prone countries in the world. According to the studies, one of the main missing links in the field of natural and unnatural crisis management is the lack of a proper structure for crisis management in the country (9). This shows that Iran's cities are not resilient and ignoring the various approaches to resilience, including institutional, can become one of the country's management challenges The failure to promote institutional resilience and reduce the risks at the city level by urban decision-makers and policymakers can decline the resilience of cities to a variety of urban disasters. However, the management of resilience is of utmost importance in various dimensions, including institutional resilience due to the characteristics of risk reduction, planning, and experience of previous incidents using the indicators: hospitality, relationships, and performance to examine the physical characteristics of institutions, such as the number of local institutions, access to information, trained and volunteer forces, rules and regulations, the interaction of local institutions with people and institutions, satisfaction with the performance of institutions, responsibility, decision-making centers, and how to manage or react to incidents according to the components of organizational structure, capacity, leadership, training, and experience. In light of the aforementioned issues, the present study aimed to investigate the indicators and components of the institutional approach to resilience in urban disaster management in Iran. The present study strived to rank the effective indicators in urban disaster management using the Vikor method and various indicators of institutional resilience, as well as a review of the literature and theoretical foundations of urban crisis management.

Methods

This applied research was conducted based on a descriptive-analytical design. In this research, library and documentary methods have been used to collect the needed data. The items of the questionnaire were rated on a 7-point Likert scale, ranging from very low to very high. The statistical population included 250 specialists and experts in urban disaster management. In the analysis of the findings in the form of the Likert scale, the fuzzy Vikor model was used. The participants were selected via simple random sampling. Cronbach's alpha coefficient of 0.783 indicated the good reliability of the questionnaire. The triangular fuzzy numbers of the Vikor method are displayed in Table 1.

Analysis of urban incident management components in the country based on fuzzy Vikor model

With reference to the studies conducted, as well as the indicators and components provided

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Table 1. Triangular Fuzzy Numbers by Vickor Method (10)

Linguistic word	Fuzzy Numbers	Triangular Fuzzy Numbers
Very low	1	0/0.5/0.150
Low	2	0.1/0.2/0.3
Relatively low	3	0.2/0.35/0.5
Medium	4	0.3/0.5/0.7
Relatively high	5	0.5/0.65/0.8
High	6	0.7/0.8/0.9
Very high	7	0.85/0.95/1

for resilience, in order to analyze urban disaster management in different dimensions, the components of capacity, organizational structure, leadership, training, and experience of previous incidents, along with the indicators provided in their subset, were examined. In this regard, all the above-mentioned dimensions were used after reviewing the relevant theoretical foundations, such as books and articles. Due to the length of the fuzzy Vikor process, some steps are avoided, and according to the evaluation of indicators, benefits, and dissatisfaction, the results of the final dimensions are presented in Table 2.

The findings obtained by the Vikor method showed that the organizational structure section with the highest score (0.0056) ranked first, pointing to its importance and effectiveness in urban disaster management; therefore, the cohesive and efficient structure of a country results in more integration and proper management. However, although decision-making and policy-making organizations and institutions5 have the necessary structure and readiness to be present and act in a timely manner in the damage caused by urban incidents, in the event of incidents and risks, there is a possibility of weakness. Therefore, a flexible and highly mobile organizational structure can provide the basis for increasing stability in organizations and decision-making institutions.

The second effective and important component in better management of urban incidents is education, which is in the next place with a score of 0.0191. Discussion and management of this component due to severe crises, especially in Iran, which is located in a disaster-prone area, requires awareness and preparation before the occurrence of a crisis. Such a country, which is faced with all kinds of unforeseen events, needs awareness, the basic condition of which is the necessary education; therefore, planning and necessary actions to increase awareness about an issue and scenario are important that should be a priority for programs and planners of an organization. Therefore, educating citizens can reduce the extent of damage and casualties from natural disasters.

The third most important issue in urban disaster management is the leadership component, which ranks third with a score of 0.1046. This strategic and important component can be very helpful in dealing with incidents. The role of leadership and unity of command during disasters has a special priority to increase cohesion between organizations and increase productivity; as a result, the management cohesion and dealing with crises in the city with appropriate and desirable leadership can play an effective role in effective management and planning, and ultimately, reduce the problems ahead.

Another component studied in this section is capacity, which ranked fourth and is one of the important pillars of organizations during crisis management. Therefore, higher capacities in organizations will enhance the performance of the organization. Nevertheless, organizations and institutions must provide the necessary capacity to establish non-governmental

Table 2. Final result of the components

Components	Si			Ri			Qi			Finalization	Final Rank
	L	M	U	L	M	U	L	M	U		
Capacity	-0.1946	0.1196	0.4308	-0.2343	0.1238	0.4109	-0.4289	0.2434	0.8417	0.1799	4
Organizational Structure	-0.2949	0.0054	0.3102	-0.2893	0.0000	0.2910	-0.5842	0.0054	0.6012	0.0056	1
Leadership	-0.2328	0.0695	0.3680	-0.2368	0.0738	0.3381	-0.4696	0.1433	0.7061	0.1046	3
Education	-0.3102	0.0000	0.3116	-0.2910	0.0295	0.3261	-0.6012	0.0295	0.6377	0.0191	2
Experience of previous incidents	-0.0862	0.2118	0.5000	-0.1097	0.2342	0.5	-0.1959	0.4460	1.0000	0.3392	5

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organizations. The development of such organizations at the city level depends on the existence of institutional capacities within a city or country. However, the survival of organizations requires increasing the necessary capacity to make maximum use of non-governmental organizations. These capacities should be used to the maximum to minimize the problems caused by urban disasters in the country.

Finally, the last component in this field is the experience of previous disasters. This component indicates that the higher the experience of an organization or a country in the discussion of urban disaster management results in the maximum reduction of the problems caused by urban disaster management. If the experience of organizations is not enough, it can trap a city or country in a dangerous quagmire. As a result, organizations and institutions models upon those in other countries, as well as necessary training of managers and leaders, can play an important and effective role in improving urban disasters, and this requires the necessary management and planning to achieve such important goals by organizations and decision-making institutions.

- Analysis of organizational structure indicators based on fuzzy Vikor model

To examine each of the studied indicators in different dimensions, the fuzzy Vikor method was used and the final results of each of the organizational structure indicators are illustrated in Table 3.

The results of organizational structure variables indicate that the readiness policy indicator with a score of 0.00059 ranked first, pointing to its importance and preference over other variables. The role of this variable in the organizational structure demonstrated that organizational policies in preparedness should be to the extent that they are prepared for all kinds of crises, especially at the city level. To this end, they should have codified policies and policymakers should reduce the problems in the

Table 3. Final result of organizational structure indicators

Boundaries	Si			Ri			Qi			Finalization	Final Rank
	L	M	U	L	M	U	L	M	U		
Unity of command	0.1549	0.3275	0.4667	0.1375	0.2183	0.2749	0.1549	0.3275	0.4667	0.1567	10
Institutional resilience program	0.1022	0.2562	0.3881	0.0728	0.1375	0.1900	0.1022	0.2562	0.3881	0.0806	6
Coordination of involved organizations	0.1216	0.2911	0.4323	0.1698	0.2426	0.2911	0.1216	0.2911	0.4323	0.1595	11
Preparation policies	0.0244	0.1611	0.2790	0.0354	0.0606	0.1051	0.0244	0.1611	0.2790	0.0006	1
Structure readiness	0.0658	0.2387	0.3913	0.0647	0.1456	0.2102	0.0658	0.2387	0.3913	0.0788	5
Local institutions and volunteers	0.1294	0.2954	0.4372	0.1173	0.1941	0.2507	0.1294	0.2954	0.4372	0.1305	9
Incident responder	0.1144	0.2751	0.4115	0.1011	0.1698	0.2224	0.1144	0.2751	0.4115	0.1078	7
Urban management in urban documents and plans	0.0687	0.2227	0.3604	0.0445	0.0970	0.1577	0.0687	0.2227	0.3604	0.0456	3
Structure recovery power	0.1074	0.2820	0.4283	0.1173	0.1941	0.2507	0.1074	0.2820	0.4283	0.1251	8
Coordination of parallel organizations	0.0175	0.1819	0.3252	0.0354	0.0970	0.1577	0.0175	0.1819	0.3252	0.0286	2
Control and monitoring centers	0.1851	0.3431	0.4670	0.1536	0.2305	0.2830	0.1851	0.3431	0.4670	0.1703	12
Disaster management in macro policies and development plans	0.0485	0.2196	0.3705	0.0404	0.1213	0.1860	0.0485	0.2196	0.3705	0.0560	4

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event of an urban crisis. This view can affect the planning and management structure and can make them better prepared than in the past. The coordination variable of parallel organizations is also in second place with a score of 0.0263, highlighting its importance and effectiveness.

Accordingly, the coordination of parallel organizations can be very reliable in urban disaster management so that urban disaster management as a part can cause great harm to cities. Disorganizations in urban disaster crisis management are caused by the lack of integrated management policy, as well as a clear legal and custodial position in the future. Nonetheless, modifications in parallel management can pave the way for expanding the integrity of organizations. Integrated management, instead of parallel work and partisanship, can greatly affect the sustainability of cities in the long run. The third variable was the management of urban documents and plans which attained a score of 0.0421. The degree of success in this field depends on the view of urban incident management in the upstream documents and types of urban plans. The preparation of upstream documents and different types of urban plans in each province and city separately and expertly can highlight the role of city managers in better control of expected and unexpected crises since each of the upstream documents and types of urban plans professionally identify different types of crises in the study area and creates necessary warnings for its planning.

Disaster Management Indicator ranks fourth in macro policies and development plans with a score of 0.0516 and this indicator, considering its position, shows that for urban disaster management, macro policies and economic, social and cultural development programs should be considered so that urban disaster management can be specifically managed and planned. The institutional resilience program indicator was also in sixth place. This indicator shows that the current structure of urban incident management in the country should be designed so that when incidents occur, cities and countries have the necessary institutional and organizational resilience and flexibility to be able to neutralize or reduce any type of incident or disaster as little as possible. The incident response variable is in the seventh place with a score of 0.0994, illustrating that the current structure of urban incident management in the country should be responsible for all levels of incidents, including local, city, provincial, regional, national, and even international. This kind of response at such a level requires the updated and flexibility of relevant organizations.

Structure recovery power indicator is another important indicator that has been studied and its score based on the mentioned method was 0.115 and this is one of the important variables in the structure of an organization so that the recovery and reconstruction of an organization after disasters in a city or country are very important, and to achieve such a level, all organs must provide the necessary tools. Another important indicator is local institutions and volunteers with a score of 0.120. This indicator also shows whether the current structure of the country's urban incident management provides the necessary supplies for such valuable institutions or not; therefore, planning for the valuable use of such organizations can be considered an exceptional opportunity.

Unity of command is another feature of the current structure of the organization, playing a major role in the management of urban disasters in the country. The stronger unity of command at different levels of disasters, whether local or city, provincial or regional, national and international, results in a stronger structure of an organization. If this unity is achieved without any special planning, we will witness a collapse in organizational structure and aggravation of problems in the city. As a result, the unity of command plays a decisive role in organizational structure. The coordination of involved organizations has been identified as one of the important indicators in organizational structure and ranked 11th. This indicator also has an effective role to play in the operations and coordination sector so that the organizations involved in the management of urban disasters in the country should provide the necessary coordination with other organizations in the operation sector to minimize the potential damages. Finally, the indicator of control and monitoring centers was in the last place with a score of 0.157. This pointed out that in the current structure of urban incident management in the country, the role of control and monitoring centers should be taken into account to easily control urban incident management.

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Analysis of training indicators based on fuzzy Vikor model

Training indicators were also examined using the fuzzy Vikor multi-criteria decision model and the results are illustrated in Table 4.

The results of the fuzzy Vikor model indicated that training effectiveness is in the first place (0.0046), pointing to its importance among the studied variables. Accordingly, more appropriate and specialized training results in a greater impact, and vice versa. Therefore, the experts assigned a high score to this indicator as the most important variable. According to experts and the final output of the model, the effectiveness of the practice is in the first place, and this indicates that the preparation and practice of different scenarios and predictions play a major role in better management of urban disasters in the country. It depends on the amount and type of future planning developed by the relevant organizations and institutions; therefore, with proper practice, the existing optimistic and pessimistic scenarios can be predicted and for each of them, special planning is performed to minimize the problems. The promotion of preparedness ranked third (0.0726), highlighting its importance among the studied variables. In the meantime, more scientific and better training of citizens and relief workers reduces the crisis and improves their level of preparedness. As a result, training on preparedness and its enhancement have a critical role to perform in the country. Trained manpower is recognized as one of the important indicators of training, demonstrating the use of necessary skills and capabilities by trained forces and volunteers in an organization. The proper use of such volunteers contributes greatly to better management of urban incidents in the country.

Education through the media is another indicator of education which ranked fifth with a score of 0.119. This indicator shows that the media have an important role in educating managers and citizens, which can bring about positive consequences in the long run if performed in a planned manner; therefore, such training has an effective role in learning managers, especially citizens. As a result, managers and citizens can have better management and performance with any kind of crisis and occurrence of urban incidents in the country with the necessary training provided by the media. The seventh indicator is the training of managers, in which the necessary and special training in the management of urban incidents in the country is very important and has a special necessity. This is palpable when managers actually benefit from this training in the event of a citywide disaster crisis. Therefore, the managers of urban incidents in the country should have scientific and widely used training in order to have a proper performance during incidents. Based on the opinions of experts, the training of

Table 4. Final result of education indicators

Boundaries	Si			Ri			Qi			Finalization	Final Rank
	L	M	U	L	M	U	L	M	U		
Educate local institutions and people	0.3512	0.5425	0.7053	0.2974	0.4109	0.5010	0.0126	0.5176	1.0000	0.2560	8
Trained manpower	0.1089	0.3589	0.5921	0.0820	0.2406	0.3875	-0.3824	0.2110	0.8021	0.1052	4
Comprehensive educational program	0.2412	0.4440	0.6300	0.1424	0.2726	0.3911	-0.2260	0.3045	0.8328	0.1520	7
Training and upgrade readiness	0.1451	0.3191	0.4878	0.0983	0.2001	0.3020	-0.3398	0.1408	0.6395	0.0727	3
Managers training	0.2225	0.4273	0.6106	0.1486	0.2788	0.3973	-0.2328	0.2990	0.8254	0.1488	6
The effectiveness of education	0.0001	0.2326	0.4482	0.0184	0.1234	0.2547	-0.5253	0.0000	0.5624	0.0046	1
The effectiveness of exercise	0.0670	0.2573	0.4306	0.0568	0.1290	0.2308	-0.4382	0.0233	0.5253	0.0167	2
Education by the media	0.1461	0.3503	0.5428	0.1424	0.2726	0.3911	-0.2934	0.2380	0.7709	0.1192	5

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local institutions and people was also recognized as the last indicator which is as important as other sections. Such an important issue depends on the level of planning of organizations and institutions, as well as the programs allocated for educating citizens.

Nevertheless, such indicators as the comprehensive education program, as well as the training of local institutions and people, ranked the last, playing a less significant role in urban disaster management. Therefore, planning and management should be performed in such a way that all indicators are systematically used simultaneously in an attempt to minimize the possible damages to cities in the case of all kinds of crises. This requires the systematic cooperation and integration of organizations and non-governmental organizations, in which training in all areas can provide a roadmap for the achievement of sustainable development.

Analysis of leadership indicators based on fuzzy Vikor model

Each leadership indicator was examined and the results of each of the studied indicators are shown in Table 5.

As illustrated in the above table, "the effectiveness of managers in prevention" with the lowest score (zero) is in the first place. This indicator will be more effective when managers and commanders make the necessary plans and scenarios for urban disaster management, and this can prevent all kinds of possible crises and minimize damage. The position and accountability of managers ranked second (0.281). This indicator suggests that when the authorities in charge of the country's urban incident management are accountable for responding to urban incidents, they can better control urban incidents and prevent more incidents.

The third indicator is the efficiency and effectiveness of managers in responding, which has a score of 0.302. In this regard, higher levels of this indicator will reduce urban disasters. Finally, the effectiveness of managers in a chaotic situation with a score of 0.504 ranked the last. Although this indicator received the lease significance, if the management of crisis prevention is performed properly and correctly, it can play a major role in reducing all types of crises; therefore, this indicator is also considered valuable when managers and commanders contribute greatly to the mitigation of chaos and disorder, and this will be very important in times of urban incidents.

Analysis of previous incident experience indicators based on fuzzy Vikor model

The results based on the fuzzy Victor method suggest that "incident experiences in the training program" ranked the first in resource needs assessment with the lowest score (zero), pointing to its importance and effectiveness, compared to other indicators. Nevertheless, the indicator can assess the needs and resources of urban incident management in the country using the experience of previous incidents and as much as management and planning are effective on this indicator, it can

Table 5. Final results of leadership indicators

Indicators	Si			Ri			Qi			Finalization	Final Rank
	L	M	U	L	M	U	L	M	U		
Efficiency and effectiveness of managers in accountability	0.1956	0.4431	0.6505	0.1624	0.3186	0.4431	-0.2189	0.3253	0.7804	0.3030	3
The effectiveness of managers in prevention	0.0382	0.2800	0.5053	0.0913	0.1245	0.1900	-0.3971	0	0.3971	0	1
The effectiveness of managers in chaos	0.3742	0.6366	0.8675	0.2332	0.3877	0.5190	-0.0286	0.5227	1	0.5042	4
The position and credibility of managers in accountability	0.2137	0.4779	0.7115	0.1224	0.2788	0.4128	-0.2549	0.2998	0.7818	0.2816	2

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make the most of resource potentials using previous incident experiences. The indicator of managers' experiences in responding with a score of 0.0377 holds the second place, reflecting its importance compared to other indicators. In this regard, this indicator shows that the more the leaders and managers of urban incidents in the country use the experiences of previous incidents in responding to urban incidents, the more it can lead to a favorable effect on response. As a result, this response, along with the appropriate experiences of managers in the event of urban incidents, will be very fruitful (Table 6).

Documenting incident experiences with a score of 0.0532 ranked the third, and this can be very effective when the experiences of previous incidents are documented and recorded. These documents are used to maximize the use of documents from previous experiences in times of urban crisis. Managers' experiences in recovery are also one of the important indicators of previous incident experiences, which hold fourth place. These experiences are tangible and evident when you make the most of the experiences of managers and other organizations since this type of experience is very important in the recovery and reconstruction of urban disaster management. Therefore, the planning and management of organizations in the country should be such that their experiences are transferable to each other so that disastrous events in cities can be better managed.

The indicator of incident experiences in structural reform was also known as one of the important and effective indicators. This type of indicator will be important in reforming the structure of a country's organization if they have used the experiences of previous incidents. In other words, if the organizational structure is reformed and revised using the experiences of previous incidents, the management of urban incidents in the country will face fewer challenges. Another important indicator in the experience of previous incidents is the transfer of managers' experience. This indicator shows that the country's urban incident management needs

Table 6. Final results of previous incident experience indicators

Indicators	Si			Ri			Qi			Finalization	Final rank
	L	M	U	L	M	U	L	M	U		
Incident experiences in the training program	0.3983	0.6494	0.8569	0.2120	0.3569	0.4809	-0.2098	0.4016	0.9708	0.1955	7
Experiences of countries in incident management	0.4263	0.6697	0.8705	0.2453	0.3824	0.4979	-0.1518	0.4454	1	0.2174	8
Managers' experiences in retrieval	0.1865	0.4776	0.7269	0.1029	0.2635	0.4031	-0.4792	0.1773	0.7927	0.0835	4
Incident experiences in structural modification	0.2638	0.5159	0.7401	0.1455	0.2913	0.4232	-0.3776	0.2357	0.8253	0.1149	5
Incident experiences in resource needs assessment	0.1135	0.3447	0.5532	0.0766	0.1880	0.3025	-0.5586	0	0.5586	0	1
Documenting incident experiences	0.1737	0.4509	0.6933	0.0975	0.2159	0.3555	-0.4941	0.1032	0.7139	0.0533	3
Transfer the experience of managers	0.2876	0.5380	0.7378	0.1484	0.2925	0.4070	-0.3584	0.2516	0.8044	0.11866	6
Managers' experiences in accountability	0.1149	0.3546	0.5734	0.1114	0.2501	0.3749	-0.5164	0.0802	0.6577	0.0377	2

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the transfer of experience from other managers in the country. When an organization does not benefit from the transfer of experiences of other organizations, it will face numerous problems in urban disaster management. Incident experiences in the educational program are one of the important indicators of previous incident experiences. This type of experience should be at the forefront of planning and management to make a kind of planning to control the crisis with special thinking. In this regard, the experiences of previous incidents in the needs assessment, planning, and implementation of training courses on urban incident management should be considered to reduce the weaknesses of planning for urban incident management and make the most of such opportunities. Such opportunities can prepare managers and cities for potential crises. The last indicator was the experiences of countries in incident management. This indicator is also important and effective in practice so that by following the example of other countries in terms of how they manage all kinds of crises in their city and country should be used to the maximum. The instruments and management used by countries to control these crises are important and valuable. That is why the leaders and managers of urban incidents in the country use the a score of 0.102, indicating its impact on urban disaster management. However, the better the planning and management of the necessary supplies in the crisis prevention and management experiences of other countries to manage urban incidents to the maximum. Moreover, using the experiences of other countries and integrating it with their own experiences can double the success of planning.

Analysis of capacity indicators based on fuzzy Vikor model

In this section, all capacity indicators were identified and then analyzed using the fuzzy Vikor model and the results are displayed in Table 7.

The results of the fuzzy method in the capacity section indicate that the impact indicator of financial resources with the lowest score (0.002) is in the first place. This score indicates how effective this indicator can be in responding to and managing urban disasters so that in urban disasters, financial resource management is a very important and effective part, alleviating many problems. Resource indicator in response is also in the second place with a score of 0.0601, and this indicator shows that if properly managed, it can be very important and effective from the existing capacities and resources in urban disaster management and disaster response. As a result, this value indicates the degree of preference and its effectiveness among the studied indicators.

The "ready supplies" is also in third place with headquarters for disaster management in the city, the more it can be useful in reducing problems and vice versa. Therefore, the mentioned indicators are the most important and effective

Table 7. Final results of capacity indicators

Indicators	Si			Ri			Qi			Finalization	Final Rank
	L	M	U	L	M	U	L	M	U		
Appropriate resource needs assessment	0.1320	0.2568	0.3570	0.1044	0.1716	0.2211	-0.1269	0.4680	0.9841	0.1992	8
Resources in recovery	0.1140	0.2211	0.3040	0.0537	0.1140	00.1604	-0.2672	0.2884	0.8013	0.1234	4
Resources control	0.1424	0.2568	0.3466	0.0484	0.1059	0.1601	-0.2419	0.3172	0.8603	0.1392	6
Resources in response	0.0257	0.1393	0.2357	0.0342	0.0979	0.1512	-0.4292	0.1430	0.6839	0.0601	2
Resources plan	0.1485	0.2556	0.3381	0.1182	0.1819	0.2280	-0.0733	0.4903	1.0045	0.2124	9
Ready supplies	0.0994	0.2130	0.3055	0.0422	0.0933	0.1466	-0.3130	0.2301	0.7717	0.1021	3
Access to resource information	0.0848	0.1992	0.2929	0.0622	0.1370	0.1981	-0.2865	0.3123	0.8720	0.1345	5
New technologies	0.1343	0.2453	0.3389	0.0672	0.1278	0.1815	-0.2094	0.3522	0.8989	0.1549	7
Impact of financial resources	-0.0203	0.0933	0.1956	0.0104	0.0622	0.1224	-0.5449	0.0000	0.5627	0.0020	1

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indicators among the studied variables according to experts and specialists, and have an important role in urban disaster management. The resource in retrieval is in fourth place with a score of 0.123 which indicates its importance; therefore, the existing capacities and potentials in the management of urban incidents in the country should be used well and managed.

Since each of these potentials and resources is an opportunity for better planning and effective management of incidents at the city level, the proper use of capacities to respond in acute and urgent situations is considered very important that can be effective in crisis management. Access to resource information is another indicator of capacity, which is in fifth place with a score of 0.134. Accordingly, how to access information capacities and resources in urban disaster management is very important since easy access to information can play an important role in crisis management and if this information and resources are not easily accessible, it can cause many problems for decision-makers. Therefore, the capacity to provide access to information and resources in the country's urban disaster management must be provided so that timely decisions can be made.

Resource control is another indicator of capacity, which is in sixth place with a score of 0.139. This indicator, like other indicators, is important and effective so that proper control and monitoring should be done in the labor of existing capacities and resources in urban incident management of the country to use the available capacities and resources. Therefore, resource control and planning for it can be considered a key point to controlling the crisis. The indicator of new technologies is one of the important components of capacity. This indicator is considered very important in the present era since using the capacities of new technologies to manage urban incidents in the country is very vital. Therefore, the proper use of these technologies and upgrading of existing facilities can provide significant assistance in the event of an incident in all dimensions. This indicator becomes apparent when the time of using the capacities and resources for managing the country's urban incidents has been assessed.

Since each region requires its own needs assessment to use the capacities and resources, the proper use of these resources and potentials should be planned and measured with the needs of the region to make the management of urban incidents in the country possible. Finally, resource planning is in last place with a score of 0.212. This type of indicator is tangible when the necessary planning is provided in the country's urban disaster management to benefit from all human capacities and capital. Therefore, resource planning during disasters or even after a crisis will play a crucial role in planning and management.

Findings

Creating inclusive, safe, resilient, and sustainable cities and towns as one of the 17 goals of global sustainable development (11) emphasizes the importance and necessity of reducing disaster risk, and today, the analysis and increase of resilience to natural disasters have become an important issue. In this regard, the role of institutional resilience in urban disaster management in Iran was evaluated and Vikor fuzzy method was used to analyze components and indicators. Accordingly, the components of organizational structure, education, and leadership (0), (0.281), and (0.504) are in the first to third places, respectively. The organizational structure with the highest score was effective in the management of urban incidents in the country. It can be stated that in order to increase sustainability in the cities of the country, the organizational structure must be in a better condition to be able to provide the necessary conditions for proper management.

Another topic of discussion in this field is education. The more appropriate and effective the training, the more successful they will be in managing urban incidents in the country; therefore, if the training is not professional and planned, it can cause many problems for the sustainability of cities during incidents. Therefore, the role of education in the effects of incidents and reducing problems is very important and decisive. Finally, the role of leadership is important and effective so that the more the level of leadership is managed at the level of an organization or a country, the more successful they will be in improving the management and urban incidents of the country, paving the way for increasing stability in the cities. However, urban disaster management is considered an important issue; moreover, how to lead with it is a strategy and guideline for a country.

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By examining the indicators of each component, it is possible to understand the status of the indicators in the area, and this is important when I know which of them is considered important in the management of urban incidents in the country to achieve proper and sustainable development. Accordingly, only the indicators that hold the first to third places are sufficient. Nevertheless, the most important indicators of organizational structure, which are in the first to third places, can be referred to as the policies of preparedness, coordination of parallel organizations, as well as urban management in urban documents and plans. They are known as the most important and effective indicators based on the opinions of experts and specialists in the community and using the Vikor fuzzy method. Therefore, in the organizational structure of a country, each of these indicators has an important and decisive role. For example, the indicator of preparedness policies in the organizational structure shows that organizational policies in the field of preparedness can be an important issue in the management of urban incidents in the country. The more up-to-date and accurate the preparedness and policies in organizations, the more effective and efficient they will be in managing the incidents in the country. The coordination among parallel organizations is also very important and effective in improving the organizational structure so that whatever is exchanged among the organizations and the necessary coordination among them can play an effective role in managing urban incidents in the country and vice versa.

One of the important discussions in organizational structure is urban management in urban documents and plans. This indicator suggests that urban incident management should be observed in upstream documents and various urban plans. The observance of its specific requirements and criteria can improve the organizational structure of a country in the short and even long term. Another important issue in the management of urban incidents in the country is the component of education. This component was also examined with a number of indicators. Among the most important indicators of education that held the first to third places, we can refer to the effectiveness of training, practicing, and the enhancement of preparedness. Among them, the effectiveness of education with the highest score (zero) indicates the highest importance. This indicator shows that education has a decisive role in the management of urban incidents in the country and its effectiveness can improve education. Another important issue in education is the effectiveness of the practice. This indicator also shows that for better education, different scenarios for urban incident management should be provided so that education can play an effective role in managing various types of disasters and the problems can be minimized. Finally, the promotion of preparedness is another important issue in education. This section also shows that training managers, citizens, and other non-governmental organizations can improve the level of readiness of organizations and this can be an important issue in the management of urban incidents in the country; nevertheless, these indicators, along with other indicators studied, can be important in reducing urban incidents with proper planning and management.

Leadership is another important issue in urban incident management. In this section, a number of indicators were evaluated, among which the effectiveness of managers in prevention, the position and credibility of managers, and finally, the efficiency and effectiveness of managers in responding are the most important and effective indicators in the management of urban incidents in the country. In this regard, the more effective managers are in preventing crises in an organization, the more it can affect the country's urban incident management and lead the country's urban disaster management. Performing the right tasks can provide the necessary prevention of all kinds of urban incidents in the country. The position and credibility of managers in accountability is another indicator of leadership.

Discussion and Conclusion

Finally, the efficiency and effectiveness of managers in accountability is another indicator of leadership, which held third place. This effective indicator is used when managers have the necessary efficiency and effectiveness for urban disaster management. Leading such tasks will make an organization efficient, and this requires the effectiveness of managers, their credibility, and ultimately, their efficiency to minimize the management of urban incidents in the country. One of the important parts of the management of urban incidents in the country is the experience of

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previous incidents. This component was evaluated with a number of important indicators, among which, incident experiences in resource needs assessment, and managers' experiences in responding and documenting incident experiences in previous incident experiences are among the most important known factors. Among the mentioned indicators, incident experiences were in the first place in resource needs assessment with the highest score. This indicator illustrates that the capacities and resources of urban incident management should be used to the maximum using the experiences of previous incidents.

Moreover, the necessary needs assessments of the organization should be identified in order to have proper management in urban incident management in the country. Managers' experiences in responding are also one of the important indicators of previous incident experience. This indicator is useful when managers have gained the necessary experience from previous incident experiences in responding to urban incidents, and this will have the necessary effectiveness not only in the short term but also in the long term in the organizations managing urban incidents in the country. Finally, the indicator of documenting incident experiences in the experience of previous incidents is in the third place and shows its importance among the studied indicators. This indicator, like any other indicator, will be effective in urban disaster management. Nevertheless, the more the experiences of previous incidents are recorded and the necessary benefits are gained from such experiences, the more the organizations and institutions that decide on urban incident management will achieve the necessary success and the field of sustainability in the cities of the country will be doubled, and this requires the maximum use of such experiences. Finally, the capacity component, like other components, includes indicators that have an important impact on improving the country's urban disaster management. In this regard, the indicators that have a greater impact on capacity can be noted as the impact of financial resources, resources in response, and ready procurement. The impact of financial resources over time will be important and effective in the capacity of an organization that provides financial resources in a sustainable manner and will play an important role in responding to and managing the country's incidents. To provide such resources, flexible planning must be tailored to the conditions of each city so that such resources can be used to improve the capacity of an organization. Resources in responsiveness are another indicator of capacity that is in second place. This indicator shows the use of existing capacities and resources in urban disaster management. If such capacities and resources are properly observed, they can play an important role in the stability of a country. Finally, ready procurement is another important indicator of capacity, which is in third place. This indicator suggests the necessary preparations in the Crisis Prevention and Management Headquarters for managing incidents at the city level. The more well-planned these procurements are in organizations, the more effective they will be in reducing the problems caused by crises, and vice versa.

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Conflict of Interests

The authors declare that there is no conflict of interest in this study.

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