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An Assessment Model for Challenges of Urban Management System in Iranian New Towns, Based on Interpretive Structural Modeling (ISM) Approach*

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Abstract

Problem Statement: Regarding the nature of the New Towns in Iran, the attempt to have a desirable habitation and an expected level of urban qualified life by residents in these settlements is faced with multiple challenges.

Aims: This research aims at presenting an evaluative model of the urban management challenges in New Towns based on the interpretive structural modeling approach.

Methodology: In the present study, the interpretive structural modeling is used to map the hierarchical relationships of the main factors. Hence, the main sources of data in this study are the opinions of a panel of experts in this field. In this method, the initial self-interaction matrix is created and the final reachability matrix is drawn. Thereafter, the variables are ranked and their relationships are clarified and clustered.

Conclusion: The results indicate that the factors are ranked in six groups that are included in the cause and effect diagram as follows: the "environmental" factors at the first level, the "social and cultural" factors at the second level, the "facilities and services" at the third level, the "administrative and institutional" factors and "urban development and architecture" factors at the fourth level, the "financing and budgeting" factors at the fifth level and finally the "planning and policy-making" and "legal" factors at the sixth level. Moreover, the clustering of factors showed that the two "planning and policy making" factors and "legal" factors are recognized as independent driving factors. In addition, "urban development and architecture", "administrative and institutional", "financing and budgeting", and "environmental" factors were identified as intermediary factors. Finally, the "facilities and services", and "social and cultural" factors were considered as dependent ones. None of the factors were clustered as autonomous. The results of this research can help planners and policy-makers to review the urban management system of New Towns for further improvement of the system structure and enhancing the ability of facing the challenges and improving the quality of life for citizens of these towns.

Keywords: *Interpretive Structural Modeling; New Towns; Urban Management System; Urban Management Challenges.*

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Introduction and problem statement

The tendency towards the establishment of New Towns was informally discussed in urban development meetings in Iran since 1975, and was eventually approved officially in the Council of Ministers in 1979. Several factors were involved in the success and failure of such towns since that time (Emami & Arab, 2017). However, the main purpose of this strategy was not changed in comparison with the pre-revolutionary period (Harati & Zivyar, 2012). The important difference between the proposed New Towns after the Islamic Revolution and the previous periods is their performance (Ziari & Gharekhloo, 2009).

During pre-revolutionary period, the main purpose of establishing these New Towns was the economic (single or multiple) functionalism while New modern towns are now considered as places for solving the overflow of large cities population. This feature makes them satellites towns rather than industrial towns (Ziari, 2006). Also, these New Towns are more likely to play a major role in the discontinuing development of the cities (Nasiri, 2014).

The establishment of New Towns in Iran was essentially a pragmatic program that lacked policy. This decision was legally established by the Cabinet. In other words, perhaps the Iranian government could not allocate a decent place for New Towns after the revolution due to financial reasons and the war (Tabrizi, 2006). What has been said so far in newly established towns is that none of them have ever been completed (Harati & Zivyar, 2012). The act of establishment of New Towns approved on 5 January 2001 states: "According to the framework of the approved plan of the Supreme Council for urban development and Architecture of Iran, hereinafter referred to as the Supreme Council, a New Town is referred to as a 'demographic zone' which is built outside the city boundary or city range, and is expected to accommodate a minimum of thirty thousand people, in addition to the buildings and facilities required for the general, social and economic life of its inhabitants" (Aeeni, 2014, 329). From the beginning, the construction of New Towns faced many challenges including lack of legal and regulatory criteria, lack of policy and management, lack of coordination and inter-organizational cooperation due to fragmentary approaches, and lack of funds and credit to implement these large projects (Zivyar & Rajabi, 2008, 53). At the moment, there are different statements about the success or failure of this program. On the one hand, the authorities and consultants of the Ministry of Roads and Urban Development, especially the "New Town Development Company" insists on the success of the program and intends to continue to develop this policy. On the other hand, critics and experts of various fields, especially urban planners offer different ideas about the ineffectiveness and failure of this policy (Zebardast & Jahanshahloo, 2007, 6). From the beginning, the construction of New Towns confronted serious challenges such as reluctance of the citizens to inhabit in these places, and failure to meet the goals of the population, low quality of urban life, low and unsatisfying identity, poor social interaction, expensive transportation, and weak links to the main city as well as many other problems such as lack of appropriate policies and inter-organizational coordination (Harati & Zivyar, 2012). Some experts believe that the pathology of the New Towns are largely based on two categories of community-based approach and insufficient expertise and technical approach, with a particular emphasis on components such as the distance from the central city, the theoretical basis that leads the actions, the degree of adherence to social reality governing the planning and management environment, the status of macroeconomic variables, the level of supply, services and infrastructure, and the manner and the success of correct locating process (Sarvar, Tavakoli & Boheiraee, 2016, 44). Altogether, with the construction of New Towns some of their problems have been revealed, and criticisms and corrective suggestions have been made (Hataminejad, Zamani, Hajinejad & Ghazayi, 2013). In the future, these problems will become challenges for New Towns. Urban management in these towns,

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apart from its multidisciplinary and multicultural nature, must focus on the economic foundations of the town, environment, participation and justice among citizens (Van Dijk, 2014) and must organize the city as an interconnected system (Chaharrahi, 2009). Since it is faced with very serious challenges, it cannot be efficient and effective without having a "coherent and targeted management system" (Kazemian, Salehi, Ayazi, Nozarpour, Imanijajromi, Saeedirezvani & Abdollahi, 2013). To define such a system, it is essential to scrutinize the challenges of urban management in New Towns and determine the importance and direction of their impact in a form of an evaluative model. Accordingly, the purpose of this research is to define an evaluative model for the challenges of urban management in New Towns based on interpretative structural modeling.

Theoretical Foundations

• New Town

For the first time, Leonardo da Vinci proposed the idea of satellite towns to prevent population growth and solve the settlement problems in Milan (Mozayeni, 1994, 260). New Towns have been established since the past century on the basis of numerous theories, including idealistic, naturalistic, philosophical, and especially the theory of garden cities and satellite towns all around the world (Ziari, 2015). A New Town is a full-featured town, whose first type was built in England after 1946 (Hornby, 2004). In fact, England has been the initiator of the planning and implementation of New Towns in the current century, based on the ideas of Geddes and Howard (Arjmandnia, 1999, 43). The establishment of New Towns in the new world was realized since the seventeenth century. The pattern of New Towns has been chosen as the basis for organizing and refining large cities. These towns have been designed and built in various types of satellite, independent, rehabilitated, sustainable, administrative and political towns in Europe, America, Australia, Asia and Africa (Bourbourajdari & Bourbourajdari, 2016). Nonetheless, today the concept of New Towns is completely different from the past (Meshkini, Soleimani, Azizi, Zareyi & Zarepisheh, 2013). The idea of the New Town has always been considered with three approaches: a) an idealist approach in the form of a utopia; b) a problem-solving approach to resolve the problems of the existing towns; and c) the regional development approach (Dastan, 2005). In general terms, there exists two types of New Towns (1) organic or unconstrained towns; and (2) pre-conceived or built New Towns (Saeedian, 2008). A New Town is a new notion that emerged especially in the early years after the Second World War in order to meet the immediate needs of housing and urban regeneration. With the help of modernization movement and its consequent innovations, a New concept of city was presented which was in contrast with the ancient urban conception of a town (Habibi, 2005). In fact, the basic principles of the establishment of New Towns can be considered in two factors: a) the characteristics of the post-war reconstruction in Europe; b) the presence and improvement of modern architecture in the physical organization of the city and the establishment of New Towns (Javad Shahidi, 1998).

• New Towns in Iran

The first experience of New Towns can be seen in Mesopotamia, neighboring Iran (Piran, 2006, 113). In Iran, looking at the issue of New Towns is different from other countries, and its efficiency and performance in Iran is different from the rest of the world. In other words, it seems that in Iran, the New Towns are not constructed based on the necessities, the national, regional, cultural and social needs. In many countries which are renowned for urban planning and urban development, such areas both at the national and regional levels are reflected on the construction of towns and adapted to the social and cultural characteristics of metropolises (Hosainzadeh Dalir, Pourmohammadi & Seyyedfatemi, 2011).

In the first half of the eighties, the Ministry of Roads and Urban Planning put three important strategies into action: rehabilitation of urban fabric with the goal of attracting proportional population and preventing the abandonment of historic fabrics; conserving the urban surroundings while protecting agricultural

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lands and environmental resources; and, finally, the establishment of New Towns (Mirian, 2006). The most important decisions taken in the physical-spatial dimension in urban development planning in the eighties was the legislation of establishing New Towns in the peripheral areas of some of the major cities and the provincial centers. This decision made so many significant areas of the country to be occupied by infrastructures which required enormous investments. Although the history of such acts dates back to the 1960s (before the Islamic revolution) when a few New Towns were built in the country, the philosophy and the ultimate cause of establishing New Towns were different from that of New Towns created after the Islamic Revolution. In other words, the new established towns during the pre-revolutionary period had industrial, administrative, and political functions, while the main reasons for the establishment of new post-revolutionary towns were to attract the population overflow from the cities; especially overcrowded provincial metropolis. This idea was most influenced by the exaggerated estimations of the population size in the country based on the high rate of population growth during the early eighties (Heydari, 2014). Establishing New Towns is one of the fastest ways to cope with the problems of urban development, which has always been a priority for urban planners in the wake of the growing population growth (Hojjati & Nematimehr, 2017). New Towns are usually classified according to their size, distance, population, type, and level of economic activity, including: (1) New independent towns; (2) New satellite towns; and (3) new continental towns (Rafieian & Mahmoodi, 2014). In another classification, the New Towns are generally categorized according to their role and function to three groups of: (1) industrial-institutional towns; (2) satellite towns; (3) New Towns with independent identities (Gharekhaloo & Abedini, 2009). Based on the typology and classification of New Towns, most of Iranian New Towns are satellite towns that function within their territory of influence and establish strong connections with it, requiring the specialized services from it. Reducing the population burden and activities of major cities is the chief function of new satellite towns (Talachian, 2004, 18).

- **Urban management of New Towns**

Generally, the tasks of urban management include: (a) urban land management; (b) urban services and infrastructure management; (c) urban environmental management; (d) promoting economic growth and improving people's living conditions (reduction of urban poverty); e) strategic planning (Sayyafzadeh, 2013). Today, urban management plays an essential role in the sustainability and development of urban life. The urban management can leave a positive impact when responsibility, sustainable financial resources and public participation are provided (Saeedirezvani, Abdollahi, Ayazi, Nozarpour, Imanijajromi, Kazemian & Salehi, 2013). The urban management system of New Towns must be designed and planned in advance in order to be able to deal with development and management issues in a timely manner; however, in most cases urban management is ignored and usually addressed after the problems have arisen (Ziyari, 2015, 66). The New Towns Symposium Statement of the Year 2004 stated that New Towns are a context for implementation of integrated urban management, and it is necessary to avoid multiplicity of "development management" in New Towns (New Towns Development Company, 2006).

The construction of New Towns has met many challenges and problems since the beginning, such as lack of appropriate policies and coordination of relevant organizations (Harati & Zivyar, 2012, 7). The need to create a strong governing structure in the development of New Towns (Zamani & Arefi, 2013), and to redefine and reorganize the management of New Towns is essential, so that the New Town Development Company (subsidiary) becomes the implementing company and the main (holding) company and as the policy headquarters can be able to plan, design and control the plan. Therefore, the implementation fully controlled and supervised by the main company and, ultimately, the above-mentioned supranational

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institution (The Research Center of Islamic Legislative Assembly, 2011,16). In general, planning to understand the challenging dimensions of the urban management system in New Towns leads to achieving the efficiency and effectiveness in urban management in New Towns regarding their multidimensional nature. Eliminating or reducing each of these challenges requires a solution that is specific to the characteristics of the New city (Aeeni, Zabihi & Saeideh Zarabadi, 2018).

Research background

After a deep scrutiny in Iranian scientific databases, a relevant research was not found that investigated the urban management and challenges in Iranian New Towns. In foreign scientific databases, definitely a research entitled "Iranian New Towns and their Urban Management" was found, and their results were completely reviewed. Also, no research on urban and regional planning and urban development with ISM model was identified. In the process of selecting and reviewing the research background, some criteria such as being related to the issues of the urban management system of the New Towns of Iran and their problems were chosen. Zamani and Arefi (2013) in a paper titled "New Towns of Iran and urban management issues" have critically studied the actors and influential factors. In the first part of this research, the planning framework of New Towns in Iran is studied. In the second part, the national and regional levels of urban planning in Iran, with an emphasis on the planning process and implementation factors are discussed. In the third part, the main planning is emphasized and in the fourth part, suggestions on improving the urban development process in Iran are offered. Based on the findings of this research, the most important issues of urban management in New Towns of Iran were identified as the challenges of allocating responsibility in the development of New Towns in Iran, lack of inter-organizational coordination and lack of public input, absence of strong governance structure in the development of Iranian New Towns, and the need for coordination and cooperation between the organization and the government. In another study entitled "The challenges of the urban management system in New Towns of Iran" Aeeni et al. (2018) have identified the challenges of this system. The significant findings of this study is the categorization of these challenges into: institutional-administrative, facilities and services, planning and policy-making, environmental, socio-cultural, urban and architectural, financial and budgeting, and legal challenges. The results of this research indicate that there are fundamental drawbacks in the policy, planning, economic, socio-cultural, environmental and even physical structure of the New Towns in Iran. In this research, the development of New Towns in Iran has been more focused on quantitative aspects, regardless of its physical, social and environmental qualities. The philosophy of the New Towns was the creation of places without any problems and challenges of the metropolitan cities; however, the pace of this development has overtaken the inter-organizational programming. This has led the urban management system of the New Towns to focus on construction management rather than urban management. The lack of an applicable pattern in the urban management system of Iranian New Towns is another central issue during the past decades. Some general solutions to the planning and resolving the identified challenges in this research are: (1) defining a coherent urban management system in New Towns of Iran; (2) explaining the actors, stakeholders of New Towns precisely; (3) offering integrated planning and policy making in the development and management of New Towns; (4) providing coherent and accountable management in New Towns.

Sarvar et al. (2016) has explored the planning structure of internal and external experiences in a study titled "Planning and management of New Towns". In this research, the pathology of New Towns has been investigated and its important findings are: weak public reaction to the exploitation, preservation and maintenance practices; failure to define roles and functions in hierarchical urban management for New Towns in urban development documents; the contradiction between the urban and social services in New Towns about the population size and demands;

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lack of coordination and agreement between people and the government and designers about the organization of the New Towns. Jalali (2010) has discussed the role of municipalities in an interview with an expert about the municipalities and management of utilization in New Towns. Some of the findings of this research, in terms of proposals, are: (1) putting a greater emphasis on inter-organizational coordination and assistance of other institutions and devices in providing faster and more favorable infrastructures; (2) having a distinctive government support from the municipality of New Towns; (3) attracting public participation in New Towns (4) selecting mayors and staff from the inhabitants; (5) putting a greater emphasis on the implementation of social and cultural activities by the municipality (in order to strengthen the social solidarity of the town); (6) making the mayor a member of the board of directors of New Town development company; (7) obliging the municipality and town council members to reside in the New Town; (8) offering opportunities for attracting economic activities.

Majlis Research Center (2001) in a study titled "New Towns: measuring the causes of failure and proposing solutions for the future" has discussed the barriers and problems of the New Towns. Some of the main findings of this research are: (a) absence of comprehensive laws and regulations for New Towns -despite their sensitivity and importance- and the exclusion of many existing laws in New Towns; b) absence of adequate administrative -managerial, political- and executive support in the macro and meso-management scale and lack of certain definition in the administrative-political division system of the country; (c) a superficial, situational and instrumental look to New Towns rather than considering it as a part of the settlement and urbanization policy in the country in terms of a certain definition of the roles and functions; (d) absence of specific financial-credit facilities for the creation or development of a New Town and converting it into salable lands, receiving the end price from the applicants, thereby reducing the relative advantage of the New Town to the marginal lands in the metropolitan cities and the middle cities and the immense sale of land in New Towns in the early stages, and thus reducing the mechanisms of execution and control; (e) absence of inter-organizational and inter-institutional coordination in establishment and management of a New Town and its exclusive monopoly or commissioning by the Ministry of Roads and Urban Development, resulting in an increase in the cost of infrastructure services and the non-conformity of related entities to its provision; (f) the fundamental weakness of the organizational and managerial committee of the New Towns and the serious problems in meso and macro management levels of the Ministry of Roads and Urban Development and other entities as well as the absence of continuous, sufficient and mandatory supervision on the New Town development company; (g) intense disagreement of internal policies of the Ministry of Roads and Urban Development in the development of new urban areas, reconstruction or regeneration of old fabrics(distressed areas) and marginal structures and the establishment of New Towns and the incongruity of land and housing policies with urban planning and regional planning; (h) the inconsistency and arbitrariness of some entities and ministries in the creation of New Towns and scattered settlements on the peripheral parts of the cities or metropolitan suburbs, or related areas and non-compliance with national and regional macro-schemes; (i) absence of mutual interconnection between national and macro-regional plans and programs with the micro planning system and the new functions of national and regional organizations and institutions (j) absence of a definition of the mechanism and motives for engaging the private and the public sector in the establishment or maintenance of New Towns.

Irandoost and Amini (2011) in a study on the assessment of the challenges in management of small cities from the viewpoint of influential groups, has identified and analyzed the problems of these places. According to the results of this study, the main issue in urban management of small cities is the financial problems and inconsistency of financial resources,

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which is undoubtedly intensified by the problems of inappropriate management and missing available opportunities (due to managerial and economic weaknesses). This study suggests that consistent financing and income for the city and using the private sector experiences are essential for urban management of small cities. At the same time, these cities must focus on solving problems in human resources, technical issues and providing capacity in different areas. Although the limitation of financial resources is the main factor contributing to other problems, such as the shortage in infrastructure, human and technical capacity, a comparison of different cities shows that urban management and innovation of urban managers is a detrimental factor in reducing the financial and material problems of small towns. Moreover, small towns have special condition and socio-cultural characteristics that may lead to some opportunities such as exploiting existing social capitals or to some threats such as ignoring the existing laws and regulations.

Hataminejad et al. (2013) have also investigated the causes of the failure of New Towns in Iran in a study titled "The pathology of New Towns in Iran". Based on the results of this research, the rapid growth rate of population in the country, the intensive rural immigrations to urban areas, and the low capacity of short-term development in cities in relation to the population growth rate during the years 1956-1996, it was not necessary to create New Towns in the peripheral areas of most of the capital cities in the country. However, the main reasons for the failure of these towns in attracting the population can be sought in the absence of a comprehensive plan to transfer industries from the metropolis to New Towns, lack of efficient public transportation system to the metropolises, uncertainty in predicting the number and groups of population, the weak economy and low income of households in New Towns, deficiencies in locating the site, absence of government support and subsidiary institutions, the slow rate of growth in land prices in New Towns compared to metropolises, higher profits from building residential units in metropolises compared to New Towns, economic recession and rising of inflation in a period between 1989-2013, mere physical approach to preparation of plans, and ignoring the will and needs of the residents were the other reasons for failure of New Towns.

Research questions

At which level is every challenge identified in terms of being a driving power?

How are the driving challenges related to dependent factors?

What is the final model that shows the relationship structure of the challenges in managing New Towns?

How is each factor categorized in the clusters of independent, dependent, autonomous and intermediary factors?

Research methodology

The Interpretative Structural Modeling (ISM) is an interactive learning process. Sage presented an interpretative structural Modeling in 1977 (Kohankhaki, 2015, 112). In this method, the relationship between variables are shown hierarchically (Seyyedjavadin, Hashemi & Mahmoudian, 2016, 82). In the interpretation of this modeling, the relationship clustering and their hierarchy is determined by the judgment of a panel of experts. It represents the structural relations between the elements of a system (Attri, Grover, Dev & Kumar, 2013; Chidambaranathan, Muralidharan & Deshmukh, 2009).

Specifically, the direct and indirect relations between the factors can show a situation better than each of these factors alone. Therefore, interpretative structural modeling provides insight into the collective understanding of these methods (Attri et al., 2013). The interpretative structural modeling is a consolidated methodology for identifying the relationships between specific items that indicate a problem or subject (Jharkharia & Shankar, 2005). It can be used at higher levels of abstraction, such as long-term planning. It can also be used to process and construct the details

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related to a problem or activity such as process design, planning for personnel, strategic planning, engineering issues, product design, reengineering the process, complex technical issues, financial decision-making, human resources, competitor analysis and e-commerce (Attri et al., 2013).

The interpretative structural modeling is completed in several steps as follows:

1. Identifying the elements that are related to the problem or subject. This step can be completed by reviewing theoretical and empirical literature or using any type of problem solving technique;
2. Establishing the basic relationships between elements by knowing which pair of elements will be examined;
3. Creating a Structural Self-Interaction Matrix (SSIM) which shows the links in terms of the contextual relationship and the direction of the relationship for each pair of elements.
4. Generating a reachability matrix from the SSIM matrix and examining the matrix transferability. Transferability of a contextual relationship is a fundamental assumption in interpretative structural modeling that states if element A is related to element B and if element B is also related to element C, element A will be also necessarily associated with C.
5. Ranking the matrix at different levels;
6. Drawing the diagram derived from achievement matrix and removal of transmission links;
7. Reviewing the ISM model to discover conceptual disorientations and make necessary changes (Attri et al. 2013; Mangla, Madaan, Sarma & Gupta, 2014; Raut, Priyadarshinee, Gardas & Jha, 2018).

Research findings

- **Structural self-interaction matrix**

Different methods such as Delphi and brain storming are used to make content relationships based on the opinions of various experts. In the present study, after training and explanation of the method to a panel of experts in a joint session, they were asked to complete the table that explained the relationship between the variables based on the instructions of interpretative structural modeling. The assessment results shown in Table 1 were achieved after a collective agreement, consultation and exchange of thoughts. In this matrix, four symbols are used to show the relationship between parameters i and j (Dubey & Ali, 2014).

V shows the effect of i on j; A shows the effect of j on i; X shows the interactions between i and j and O indicates no relationship between i and j (Shoul & Sadeghi, 2017, 68).

- **Achievement matrix**

The structural self-interaction matrix is converted into a two-dimensional matrix, called the initial achievement matrix. Instead of using the symbols of V, A, X, and O, the numbers 0 and 1 are used in this matrix. Replacements of 0 and 1 follow the following rules:

1) If the input (i,j) in the self-interaction matrix represents V, then the input (i,j) is equal to the digit 1 and the input (i,j) is equal to the digit 0 in the achievement matrix.
2) If the input (i,j) in the self-interaction matrix represents A, then the input (i,j) is equal to the digit 0 and the input (i,j) is equal to the digit 1 in the achievement matrix.
3) If the input (i,j) in the self-interaction matrix represents X, then the input (i,j) is equal to the digit 1 and the input (i,j) is equal to the digit 0 in the achievement matrix.
4) If the input (i,j) in the self-interaction matrix represents O, then the input (i,j) is equal to the digit 0 and the input (i,j) is equal to the digit 1 in the achievement matrix.

Based on the above rules, the achievement matrix for the factors related to the challenges of the New Town is presented in Table 2 (Mangla et al., 2014).

In the presence of transfer factors, it is assumed that if variable A affects variable B and if variable B also affects variable C, then variable A will also be related to variable C (Mangla et al., 2014). Since there was no such situation in the matrix of present study and the variables that were not related to each other were not also interconnected to other variables through mediators, the initial achievement matrix was the

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Table 1. The evaluation of experts from the relationships between factors. Source: authors.

	Urban management challenges in New Towns	Legal	Financing and budgeting	Social and cultural	Environmental	Main axis: Planning and policy making	Urban planning and architecture	Facilities and services	Administrative and institutional
Main axis	Administrative and institutional	A	X	V	X	A	X	V	
	Facilities and services	A	A	V	X	X	A		
	Urban planning and architecture	A	A	X	X	A			
	Planning and policy making	O	V	V	V				
	Environmental	O	X	O					
	Social and cultural	X	O						
	Financing and budgeting	A							
	Legal								

Table 2. The final structural self-interaction matrix. Source: authors.

	Urban management challenges in New Towns	Driving power	Main axis: Legal	Financing and budgeting	Social and cultural	Environmental	Planning and policy making	Urban planning and architecture	Facilities and services	Administrative and institutional
Main axis	Administrative and institutional	6	0	1	1	1	0	1	1	1
	Facilities and services	4	0	0	1	1	1	0	1	0
	Urban planning and architecture	5	0	0	1	1	0	1	1	1
	Planning and policy making	7	0	1	1	1	1	1	1	1
	Environmental	5	0	1	0	1	1	1	1	1
	Social and cultural	3	1	0	1	0	0	1	0	0
	Financing and budgeting	5	0	1	0	1	0	1		1
	Legal	6	1	1	1	0	0	1	1	1
	Dependence	41	2	5	6	6	2	7	7	6

same as the final achievement matrix. In this table, the driving power and dependence of each factor are also shown. The driving power of a particular factor is equal to the number of affecting factors (also including the factor), while the dependence is the total number of affected factors (also including the factor).

In this table it is shown that the most powerful driving powers are firstly the "planning and policy making" (with driving power of 7) and, secondly the "administrative and institutional" and "legal" factors

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(with driving power of 6). The least powerful one is related to the "social and cultural" factors (with driving power of 3). Furthermore, the factors of "facilities and services" and "urban planning and architecture" are the most dependent (with a dependence degree of 7) and the "planning and policy" factors (with the dependence degree of 2) are the least dependent. Based on the driving and dependence power, the factors are divided into four groups of autonomous, dependent, intermediate and independent (driving) factors (Table 9); (Nandakumar, Jharkharia & Nair, 2014).

Ranking variables

The achievement and antecedent sets are achieved from the final achievement matrix. The achievement set includes the affected elements and the element itself. The antecedent set includes the affecting elements and the element itself. Thus, the intersection sets are identified in each set. The elements with common achievement sets are then put into the first level of hierarchy in the structural interpretative modeling.

The first element in the structural interpretative modeling hierarchy does not affect any element above. When the first element is determined, it is separated from other elements. Then, through the same process, another level of elements is created. These specified levels are used in the formation of causal diagrams (Fig. 2) and the final model. Table 3 shows that the "environmental" factor is at the first level. Therefore, it is at the first level of structural interpretative modeling hierarchy. This cycle continues until tall levels of the variables are known. These cycles are shown in Table 3 to Table 8.

To determine the first level of the research model, as shown in Table 3, first the achievement set and antecedent set are computed for all the factors. Then the intersection set is shown in the fourth column of the table. In this table, the factor or factors with the same achievement and intersection columns are considered as the first level factor. As aforementioned,

Table 3. Partitioning the first level of variables. Source: authors.

Factors	Intersection set	Antecedent set	achievement set	Level
Administrative and institutional	1, 3, 5, 7	1, 3, 4, 5, 7, 8	1, 2, 3, 5, 6, 7	
Facilities and services	2, 4, 5	1, 2, 3, 4, 5, 7, 8	2, 4, 5, 6	
Urban planning and architecture	1, 3, 5, 6	1, 3, 4, 5, 6, 7, 8	1, 2, 3, 5, 6	
Planning and policy making	2, 4	2, 4	1, 2, 3, 4, 5, 6, 7	
Environmental	1, 2, 3, 5, 7	1, 2, 3, 4, 5, 7	1, 2, 3, 5, 7	1
Social and cultural	3, 6, 8	1, 2, 3, 4, 6, 8	3, 6, 8	
Financing and budgeting	1, 5, 7	1, 4, 5, 7, 8	1, 2, 3, 5, 7	
Legal	6, 8	6, 8	1, 2, 3, 7, 7, 8	

Table 4. Partitioning the second level of variables. Source: authors.

Factors	Intersection set	Antecedent set	achievement set	Level
Administrative and institutional	1, 3, 7	1, 3, 4, 7, 8	1, 2, 3, 6, 7	
Facilities and services	2, 4	1, 2, 3, 4, 7, 8	2, 4, 6	
Urban planning and architecture	1, 3, 6	1, 3, 4, 6, 7, 8	1, 2, 3, 6	
Planning and policy making	2, 4	2, 4	1, 2, 3, 4, 6, 7	
Social and cultural	3, 6, 8	1, 2, 3, 4, 6, 8	3, 6, 8	2
Financing and budgeting	1, 7	1, 4, 7, 8	1, 2, 3, 7	
Legal	6, 8	6, 8	1, 2, 3, 6, 7, 8	

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the "environmental" factor was identified as the first level of causality diagram in the present study.

In Table 4, with the removal of the first level factor, the process of identification of variables continued at the second level. At this level, the "social and cultural" factor was identified as the second level of the causality diagram.

In Table 5, with the removal of the first and second level factors, the process of identification of variables continued at the third level. At this level, the "facilities and services" factor was identified as the third level of the causality diagram.

In Table 6, with the removal of the first, second and third level factors, the process of identification of variables continued at the fourth level. At this level, the "administrative and institutional" factors and "urban planning and architecture" factors were identified as the fourth level of the causality diagram.

In Table 7, with the removal of the first, second, third, and the fourth level factors, the process of identification of variables continued at the fifth level. At this level the "financing and budgeting" factor was identified as the fifth level of the causality diagram.

In Table 8, with the removal of the first, second, third, fourth and fifth level factors, the process of identification of variables continued at the sixth level. At this level, the factors of "planning and policy" and "legal" factors were identified as the sixth level of the causality diagram.

Classification of factors

In this section, the challenges of New Towns are grouped into four clusters (Fig. 1). The first cluster consists of autonomous factors, which both have weak driving and autonomous power. These factors are not related to the system and their link to the system is negligible. The second cluster is comprised of the dependent factors that have low driving power and strong dependence power. The third cluster includes linking factors that have both strong driving and dependence power. These factors are not constant, since they affect other variables when they change, and the feedback of these effects on their own is also tangible.

Table 5. Partitioning the third level of variables. Source: authors.

Factors	Intersection set	Antecedent set	achievement set	Level
Administrative and institutional	1, 3, 7	1, 3, 4, 7, 8	1, 2, 3, 7	
Facilities and services	2, 4	1, 2, 3, 4, 7, 8	2, 4	3
Urban planning and architecture	1, 3	1, 3, 4, 7, 8	1, 2, 3	
Planning and policy making	2, 4	2, 4	1, 2, 3, 4, 7	
Financing and budgeting	1, 7	1, 4, 7, 8	1, 2, 3, 7	
Legal	8	8	1, 2, 3, 7, 8	

Table 6. Partitioning the fourth level of variables. Source: authors.

Factors	Intersection set	Antecedent set	achievement set	Level
Administrative and institutional	1, 3, 7	1, 3, 4, 7, 8	1, 3, 7	4
Urban planning and architecture	1, 3	1, 3, 4, 7, 8	1, 3	4
Planning and policy making	4	4	1, 3, 4, 7	
Financing and budgeting	1,7	1, 4, 7, 8	1, 3, 7	
Legal	8	8	1, 3, 7, 8	

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The fourth cluster consists of independent factors with strong driving power, but weak dependence power. In this clustering, it is clear that the "planning and policy-making" and "legal" factors due to their high influence on other factors and low impact from them are placed in the fourth cluster. These factors are the main basis for other factors in terms of the logic of cause and effect relationships. In contrast, the two "facilities and services" and "social and cultural" factors are placed in the second cluster due to the low impact from other factors and high influence on others. These factors are affected by the logic of causality relationships. In the logic of cause and effect relationships, the "administrative and institutional", "urban planning and architecture", "environmental", and "financing and budgeting" are considered the intermediate between

Table 7. Partitioning the fifth level of variables. Source: authors.

Factors	Intersection set	Antecedent set	achievement set	Level
Planning and policy making	4	4	4, 7	
Financing and budgeting	7	4, 7, 8	7	5
Legal	8	8	8	

Table 8. Partitioning the sixth level of variables. Source: authors.

Factors	Intersection set	Antecedent set	achievement set	Level
Financing and budgeting	4	4	4	6
Legal	8	8	8	6

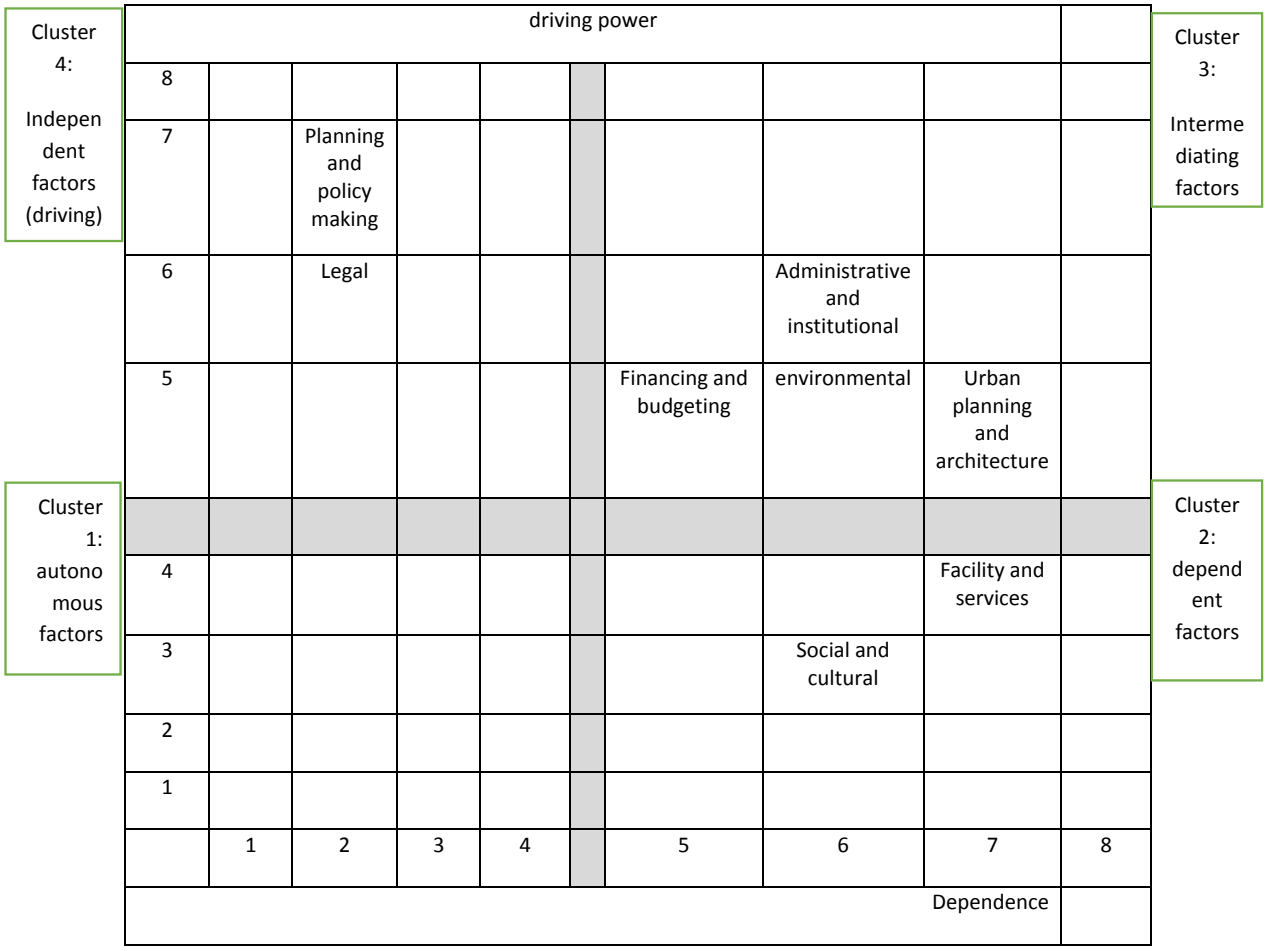

Fig. 1. Clustering the challenges of urban management in New Towns. Source: authors.

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causal variables as intermediary variables, due to high driving and dependence power. None of the research factors in the present study are placed in the first cluster, meaning all variables can be inserted into the chain of causal relationships.

The formation of structural interpretative modeling

Considering Table 2, a model was created based on the experts' assessment of the challenges of urban management in New Towns, as shown in Fig. 1. In the structural diagrams, the transitive factors were removed and, finally, an interpretative structural model was achieved. Fig.2 shows that "planning and policy-making" and "legal" factors are at the highest level and are the basis for the development of the interpretative structural model. The interpretive structural model and hierarchical model depict the relations of factors that start from the sixth level and extend to the first level (environmental factor).

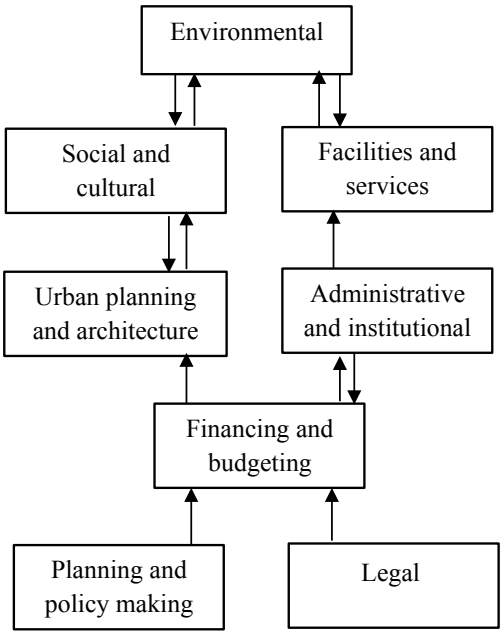

Fig. 2. The final interpretative structural model. Source: authors.

Conclusion

Today, the New Towns face major management challenges. In the present study, eight of these challenges and their impact were discussed according to their level of importance. The challenges addressed in this study include: environmental, facilities and services, urban planning and architecture, social and cultural, administrative and institutional, financial and budgetary, legal, and planning and policy-making factors. The interpretative structural modeling was used to examine the relationship between these variables. This approach was used to determine the driving power and dependence of the abovementioned factors.

In this study, the first question examined the driving power of each of the challenges. The results of the research showed that the "planning and policy-making", and the "legal" factors had the highest driving power and can be considered as the most fundamental factors. Furthermore, it was concluded that the "facilities and services" and "social and cultural" factors were influenced by other factors due to their high dependence and low driving power. Other variables had relatively the same driving and dependence power.

The second question of the present study was about the relationship between dependent factors. Therefore, the structural modeling of the management challenges in New Towns was used to show these relationships in levels of influence that can be seen in Tables 4-9. In this ranking, the "planning and policy-making" and "legal" factors are at the highest level and the "environmental" factor is at the lowest level. Some of the factors have a one-way relationship, such as the relationship of the "legal" challenge with the "financing and budgeting" challenge. However, some of the challenges have a mutual relationship, such as the relationship of "financing and budgeting challenge" with the "administrative and institutional" challenge.

The third question was "what is the final model that shows the relationship structure of management challenges in New Towns". As shown in Fig. 2, the final model is devised in five levels in which the "environmental" is at the lowest level. The levels higher than "environmental" challenge, the "facilities and services" and the "social and cultural" factors have a mutual relationship with the "environmental" factors. At the third level, the "administrative and institutional" challenges have a direct impact on the challenge of "facilities and services" and the challenge of "urban development and architecture"

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with a mutual interaction with the "social and cultural" challenges. At the fourth level, the "financing and budgeting" challenge has a mutual interaction with "administrative and institutional" challenges and has a direct impact on the challenges of "urban development and architecture." At the fifth level, there are "legal" and "planning and policy making" challenges, both of which have a direct impact on the "financing and budgeting" challenges.

The fourth question in the present study was "what are the clusters for the independent, dependent, autonomous and interacting factors". These factors are characterized in four categories of autonomous, dependent, intermediate and driving factors shown in the diagram presenting the driving and dependence power of the management challenges in New Towns. In this diagram, the factors of "planning and policy-making" and "legal" factors are identified as driving factors; the factors of "facilities and services" and "social and cultural" factors are identified as dependent factors, and the "administrative and institutional", "urban development and architectural", "financing and budgeting", and "environmental" factors are identified as intermediary ones. None of these factors were identified as an autonomous one, and this indicates that all factors contributed to the formation of an interpretive structural model and that all factors were related to other variables. Moreover, the intermediary are unstable ones. The interpretative structural modeling is as follows:

1) This model admits that all the problems of the New Towns and all the major criticisms about New Towns are due to absence of "facilities and services", the low identity and low level of affiliation in inhabitants, or in the other words due to the "social and cultural" factors.

2) Despite the initial premise which addressed all problems to urban management or urban managers of New Towns, the obtained model admits that other parameters such as "urban development and architecture", "financing and budgeting" and "environmental" factors have exacerbated these problems.

3) The lowest point of the interpretative structure modeling diagram shows that the main driving force of all these challenges should be sought in "planning and policy-making". In other words, all problems come to the point when decisions are made for establishing a New Town. Determining appropriate goals for New Towns and adopting a suitable strategy can prevent many future challenges. Clearly, it will be very different when we consider the New Town as an independent, self-sufficient, humanistic and valuable place where Iranian-Islamic architecture values can be displayed; a place renowned in the province, and even the international community rather than a satellite town for metropolises. Being a satellite town can lead to future challenges and problems in New Towns that will influence its management.

On the other hand, the absence of "legal" foundations in New Towns and absence of appropriate regulations can stimulate many other challenges and problems in the New Towns. In other words, the law of New Towns has raised many challenges in the management of these towns and has led to insufficient services, facilities, and required resources despite expectations. Improving the New Towns and revising these structural conditions can create and sustain financial resources needed for the management of New Towns. It can improve urban and architectural standards and increase the provision of appropriate services and facilities for citizens and promote the cultural and social indicators and a sense of affiliation to the town.

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Reference list

• Aeeni, M. (2014). *Urban management in Iran from the perspective of the laws*. Tehran: Rayehe-ye Tasnim.

• Aeeni, M., Zabihi, H. & Saeideh Zarabadi, Z. S. (2018). Investigating the challenges of urban management system in New Towns of Iran. *Journal of Urban Economics and Management,* 7(27), 111-124.

• Arjmandnia, A. (1999). Hayat-e Ejtemaei dar Shahr-e Jadid [Social Life in New Town]. *Abadi*, 8(29) 41-50.

• Attri, R., Grover, S., Dev, N. & Kumar, D. (2013). An ISM

www.SID.ir

Archive of SID

approach for modelling the enablers in the implementation of Total Productive Maintenance (TPM). *International Journal of System Assurance Engineering and Management,* 4(4), 313-326. doi: 10.1007/s13198-012-0088-7e

• Bourbourajdari, M. & Bourbourajdari, M. (2016). Conceptual model of patterning properly residential parcels in New Towns using location-based data analysis: A case study of Pardis town. Studies of Geography, *Civil Engineering and Urban Management,* 2(1), 36-44.

• Chaharrahi, Z. (2009). *An analysis of the physical divisions of Shiraz city based on integrated urban management* (Master's Thesis in Geography and Urban Planning). University of Tehran, Tehran, Iran.

• Chidambaranathan, S., Muralidharan, C. & Deshmukh, S. (2009). Analyzing the interaction of critical factors of supplier development using Interpretive Structural Modeling—an empirical study. *The International Journal of Advanced Manufacturing Technology,* 43(11-12), 1081-1093. doi: 10.1007/s00170-008-1788-7.

• Dastan, M. (2005). *The position of New Towns in sustainable development. Proceedings of New Town Development Company (Vol. III).* Tehran: New Towns Development Corporate publications.

• Dubey, R. & Ali, S. (2014). Identification of Flexible Manufacturing System Dimensions and Their Interrelationship Using Total Interpretive Structural Modelling and Fuzzy MICMAC Analysis. *Global Journal of Flexible Systems Management,* 15(2), 131-143. doi: 10.1007/s40171-014-0058-9

• Emami, M. & Arab, N. (2017). Review of the Indicators of New city Location. *Journal of Human and Environment,* (41), 131-143.

• Gharekhloo, M. & Abedini, A. (2009). Assessing the challenges and problems of New Towns and their success in Iran: Sahand New Town. *MODARES- Olum-e Ensani,* 13(1), 165-191.

• Habibi, S. M. (2005). New Towns, a threshold for the development of urban memory and recollection. *Proceedings of the International Conference on New Towns.* Tehran: New Towns Development Corporate publications.

• Harati, S. & Zivyar, P. (2012). *Jaygah-e Shahr-ha-ye Jadid dar Nezam-e Shahri [The position of New Towns in the urban system].* Tehran: Jahad Daneshgahi Publications, Shahid Beheshti Branch.

• Hataminejad, H., Zamani, Z., Hajinejad, S. & Ghazayi, M. (2013). *Pathology of New Towns in Iran. Geographical Data (SEPEHR),* 22 (88), 47-57.

• Heydari, J. (2014). A survey of the necessity of creating a Newtown; Aalishahr and its performance evaluation. *Journal of Spatial Planning,* 3 (14), 115-134.

• Hojjati, N. & Nematimehr, M. (2017). New Town of Hashtgerd cultural planning. *Soffeh*, 27(77), 79-98.

• Hosainzadeh Dalir, K., Pourmohammadi, M. & Seyyedfatemi, S. M. (2011). The Study the Necessity of New Towns Creation in Iranian Urban System. *Journal of Geography and Planning,* 16(38), 1-18.

• Hornby, A. (2004). *Oxford advanced learner's dictionary of current English.* Oxford: Oxford University Press.

• Jharkharia, S. & Shankar, R. (2005). IT-enablement of supply chains: understanding the barriers. *Journal of Enterprise Information Management,* 18(1), 11-27. doi: 10.1108/17410390510571466

• Irandoost, K. & Amini, A. (2011). Assessment of the Management Challenges of Towns from the Influential Groups Viewpoint. *Journal of Urban Studies,* 1(1), 91-108.

• Jalali, D. (2010). Shahrdari-ha va Modiriyat-e Bahrebardari dar Shahr-ha-ye Jadid [Municipalities and utilization management in New Towns]. *Publications of the Municipalities*, 11(99), 41-47.

• Javad Shahidi, K. (1998). *Moghadame'ei bar Mafahim-e Noshahr-ha az Aghaz ta Emrooz [Introduction to the concepts of new cities, from the beginning to the present].* Tehran: Pajoohandeh Publication.

• Kazemian, Gh., Salehi, E., Ayazi, S.M., Nozarpour, A., Imanijajromi, H., Saeedirezvani, N. & Abdollahi, M. (2013). *Modiriyat-e Shahri (Vol. I): Mabani va Hoze-ha [Urban management (Vol. I): Principles and Areas].* Tehran: Tisa.

• Kohankhaki, S. (2015). Shenasayi-e Avamel-e Hayati-ye Movafaghiat-e Tejarat-e Sayyar ba Rouykard-e Tafsiri-Sakhtari [Identification of the key factors in the success of commerce using an interpretative structural Modeling]. *Bazaryabi-ye Pars Modir,* 1, 111-122.

• Majlis Research Center (2001). *New Towns: measuring failures and proposing solutions for the future (No. 6206, Subject Code 410).* Tehran: Majlis Research Center, Infrastructure Office.

• Mangla, S., Madaan, J., Sarma, P. & Gupta, M. (2014). Multi-objective decision modelling using interpretive structural modelling for green supply chains. *International Journal of Logistics Systems and Management*, 17(2), 125. doi: 10.1504/ijlsm.2014.059113

• Meshkini, A., Soleimani, M., Azizi, H., Zareyi, M. & Zarepisheh, N. (2013). Evaluating the degree of goals achievement of New Towns in Iran (A case study of Sadra New Town). *Shahr-ha*, 1(1), 29-41.

• Mirian, S. M. (2006). Tajarob-e Ijad-e Shahr-ha-ye Jadid dar Iran va Jahan [Experiences of creating New Towns in Iran and the world]. *Proceedings of the International Conference on New Towns.* Tehran: New Towns Development Corporate publications.

• Mozayeni, M. (1994). *Maghalati dar Bab-e Shahr va Shahrsazi [Articles on city and urban planning].* Tehran: University of Tehran Press.

• Nandakumar, M. K., Jharkharia, S. & Nair, A. S. (Eds.) (2014). *Organizational flexibility and competitiveness.* New Delhi: Springer India.

• Nassiri, E. & Baba, A. (2014). Shahr-ha-ye Jadid va Tosse'ye Paydar-e Shahri [New Towns and Sustainable Urban Development]. *National Conference on Civil Engineering, Architecture and Sustainable Urban Management.* Gorgan: National Standards Organization.

www.SID.ir

• New Towns Development Company (2006). *Statement of the International Conference on New Towns.* Tehran: New Towns Development Corporate publications.

• Piran, P. (2006). Shahr-ha-ye Jadid, Bi-tarikh va bedun-e Farhang: Mas'ale-ye Hoviatyabi [New Towns, without history and culture: identity issues]. *Proceedings of identity of New Towns.* Tehran: New Towns Development Corporate publications.

• Rafieian, M. & Mahmoodi, M. (2014). Evaluation of location modeling of New Towns in Tehran using multivariate evaluation. *Geography and Development Iranian Journal,* 12(36), 109-122.

• Raut, R., Priyadarshinee, P., Gardas, B. & Jha, M. (2018). Analyzing the factors influencing cloud computing adoption using three stage hybrid SEM-ANN-ISM (SEANIS) approach. *Technological Forecasting and Social Change,* 134, 98-123. doi: 10.1016/j.techfore.2018.05.020

• Saeedirezvani, N., Abdollahi, M., Ayazi, S.M., Nozarpour, A., Imanijajromi, H., Kazemian, Gh. & Salehi, E. (2013). *Modiriyat-e Shahri (Vol. I): Barrasi-ye Tatbighi-ye Nezam-e Modiriat-e Shahri dar Keshvar-ha-ye Nemooneh [Urban management (Vol. III): Comparative study of urban management system in sample countries].* Tehran: Tisa.

• Sarvar, R., Tavakoli, M. & Boheiraee, H. (2016). *Barnamerizi va Modiriyat-e Shahr-ha-ye Jadid: Tose'e-ye Ejtemaei va Sarzandesazi-ye Shahri [Planning and management of new cities: social development and urban vitality].* Tehran: Armed Forces Geographical Organization.

• Saeedian, A. (2008). *Shenakht-e Shahr-ha-ye Iran [Understanding the cities of Iran.* Tehran: Elm-o zendegi publications.

• Seyyedjavadin, S.R., Hashemi, M. & Mahmoudian, O. (2016). A model for explaining social responsibility in oil and gas companies using Interpretative Structural Modeling (ISM), *Journal of Public Administration.* 8(1), 75-92.

• Shoul, A. & Sadeghi, S. (2017). Presenting an Interpretive Structural modeling Approach of Agility Criteria (Case Study: Fajr Jam Gas Refinery). *Journal of Industrial Management*, 12(40): 63-80.

• Sayyafzadeh, A. (2013). *Modiriat-e Shahri-ye Kalanshahr-e Tehran: Forsat-ha va Chalesh-ha [Tehran metropolis urban management: opportunities and challenges].* Tehran: Amirkabir publications.

• Tabrizi, J. (2006). Negahi be Mabani-ye nazari-ye Sakht-e Shahr-ha-ye Jadid dar Iran [A look at the theoretical foundations of New Towns in Iran]. *Proceedings of the International Conference on New Towns.* Tehran: New Towns Development Corporate publications.

• Talachian, M. (2004). *Negahi be Shahr-ha-ye Jadid [A look to the new cities].* Tehran: New Towns Development Corporate publications.

• Van Dijk, M. (2014). *Managing cities in developing countries: the theory and practice of urban managemen.* Tehran: Tisa Publishing.

• Zamani, B. & Arefi, M. (2013). Iranian New Towns and their Urban Management Issues: A critical review of influential actors and factors. *Cities*, 30(1), 105-112. doi: 10.1016/j.cities.2012.01.003

• Zebardast, E. & Jahanshahloo, L. (2007). A Survey about Hashtgerd New City Operation in Surplus Population Attraction. *Geography and Development Iranian Journal,* 5(10), 5-22.

• Ziari, K. (2006). The planning and functioning of New Towns in Iran. *Cities*, 23(6), 412-422. doi: 10.1016/j.cities.2006.08.006

• Ziari, K. & Gharekhloo, M. (2009). A Study of Iranian New Towns during Pre- and Post-Revolution. *International Journal of Environmental Research,* 3(1), 143-154. doi: 10.22059/IJER.2009.43

• Ziari, K. (2015). *Barnamerizi-ye Shahr-ha-ye Jadid [Planning of New Towns].* Tehran: Samt Publications.

• Zivyar, P. & Rajabi, A. (2008). The spatial expansioh of Tehran and the necessity of creating new cities witn empnasison Pardis. *Territory*, 5(19), 53-65.

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