Challenges of the Iranian government in smartening cities by emphasizing the model of good governance: Case study of Tehran

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Abstract
One of the main obstacles facing urban management, especially in metropolitan areas, is the fragmentation of urban management in terms of policy, decision-making, planning, guidance and monitoring. The problem that is most prevalent today in the field of urban management in developing countries, including Iran, is the multiplicity of different authorities and institutions responsible for implementing existing laws. Each section works out to implement the laws, with the structure and framework that they define for their institution efficiency, which creates various challenges as well as inconsistency in urban management system.
In order to achieve the desired urban governance as one of the infrastructures and principles of sustainable urban development in Tehran as a model of urbanization in Iran with a rate of 93% urbanization, urban management should be directed toward the smart city. This article discusses how the smart city and good governance can influence one another in Tehran metropolitan management. In this regard, we concluded that good governance has a positive and effective role in improving the smart city and affects all six indicators of the smart city, namely smart people, smart economy, smart transportation, smart governance, smart living and smart environment; and challenges in smart city can be also addressed and resolved by emphasizing the components and indicators of good governance. At the same time the more a city is smarten the more opportunities are provided for a good governance to accomplish sustainable development in cities.

Keywords: smartening Tehran, good governance pattern, challenges, accountability, transparency.

1. Introduction
Good governance is designed to measure the performance of governments, while a large portion of the world's population live in cities around the world, and urban people have become the subject of governance. In fact, the third millennium AD is the millennium of urbanization. As the process of urbanization in the world has accelerated, human progress in the field of information technology has changed the life style of human beings in cities. As the result the strategy of urban management has changed and evolved in the same way.

Cities, as the intersection of government performance with the demands and behaviors of citizens, are now considered not only a place to live but also a place to test the ability of governments to optimally manage the demands of citizens. In this regard, the latest urban management strategy has been presented under the title of Smart City. The most common definition of a smart city is a city, in which investment on human resources, social capital, and information and communication technology infrastructure grows, has a high quality of life, and its natural resource management is conscious.

The smart city, as a new paradigm in metropolitan management, has important differences from the electronic city paradigm, which can be expressed as follows:

Table 1. Differences between smart city and electronic city

Title	Title Smart City	Electronic City
Infrastructure tools	Goal	Target
Communication systems tools	Goal	Target
Electronic space	A platform for providing instrumental services	To improve the quality of service
The scope of work	Between the government and the people	The integration of the government and the citizen
The main criteria	Technology infrastructure	Innovation, creativity, competitive intelligence
The final status	Infrastructure or physical capital	Intellectual capital, intellectual knowledge or social infrastructure
The goal	Speed and accuracy	Speed and smartness
Management	Outsourcing	Insourcing and Interactive Web
Data policy	Data collection and its excess	Analysis and data mining
Policy	Mechanization	Intelligentization

Jeffinger[1] considers the "smart city" to be a city with the following six qualifications:
1. Smart economy: Smart economics refers to cities with smart industries, which are either in the field of information and communication technology or industries in which information and communication technology is involved in their production processes. Smart economics pursues four main goals, which is to develop regional or global competition, to give citizens access to business opportunities, to help preserve rural populations, and to use electronic tools.

2. Smart transportation: This factor means providing the ground for public access to new technologies and their use in everyday urban life. The main goal of this criteria is smart transportation systems, reducing traffic and creating cultures such as the use of new vehicles. The realm of this index includes information and communication technology infrastructure, use of technology at home, use of the Internet, broadband coverage, use of broadband, influence of the use of mobile Internet, use of mobile phones, access to public Internet , Wi-Fi access points in cities, public Internet access centers, and contract development with Internet Service Providers.

3. Smart environment: This factor refers to the use of new technologies to protect and maintenance the environment. The smart environment includes factors just like as security and trust, the use of information and communication technology to improve public security, culture and identity, and initiatives to digitize cultural heritage.

4. Smart citizen: This factor includes education, people with university degrees, the existence of a university in the city, the existence of a place to implement educational projects, the availability to introduce pilot projects to the market, virtual education, projects To create and develop digital classrooms, lifelong learning, human capital, cooperation between companies and knowledge-based centers, research, development and innovation.

5. Smart living: means collecting various aspects that help to improve the quality of life of citizens, including culture, health, safety, housing, tourism and so on. Smart living goals include access to e-health services, patient information management, automation and smartening. The realm of smart living also include e-health card, online medical services, remote home control or patient warning systems, electronic access and inclusion, and the development of digital applications for vulnerable groups.

6. Smart government: This component includes active political participation, citizenship services and smart use of e-government. In addition, smart governance refers to the use of new communication channels such as e-government or e-democracy. Intelligent government goals include developing comprehensive processes, building a strong bridge between government agencies, and improving access to services.

All above mentioned criteria of a smart city can be accomplished through a comprehensive program to design and implement a smart city. In this regard, it can be said that a smart city can be implemented under the shadow of good governance. The pillar of protest and accountability, political stability, lack of violence and the effectiveness of the government are the characteristics of good governance which can be accomplished in the context of the smart government (with emphasis on the characteristics of participation in decision-making and transparency of governance), smart people (with emphasis on The characteristics of ethnic participation and pluralism), smart living (with emphasis on the feature of social cohesion) and smart economy (with emphasis on the feature of international consolidation) [2]. The pillars of the quality of regulation and the rule of law and the control of corruption are the hallmarks of good governance in all elements of the smart city, especially the two pillars of the economy and smart government [3].

Accordingly, the smart city today can be manifested through development and growth of economic, social and cultural infrastructure, in urban communities and in the form of good urban governance, and the Islamic Republic of Iran is no exception. The urban planning of the information age offers a variety of information models, patterns, textures and urban forms, which is a necessity for smart urban planning in Iran. In recent years, the issue of smart cities in Iran has always been raised, and Tehran, as the capital of Iran, has been introduced as the first to be smart city in Iran. However, experts believe that the city is still far from new features in this area and the need to upgrade technology, create infrastructure and researches in this area is necessary. Meanwhile, the manifestation of smart city in the framework of good urban governance is one of the most important concerns of Tehran metropolis in metropolitan management. The expected achievements of Tehran Smart Program are sustainable urban development, guiding urban innovation, citizen satisfaction, promoting participation and transparency, as well as efficient management and service systems. Therefore, this article seeks to address the challenges of the Iranian government

in smartening cities by conducting a case study of Tehran and examining the requirements for the manifestation of a smart city in the Islamic Republic of Iran based on the theory of good governance as well as the strategies for resolving those challenges.

2. Research background

Pourahmad [4] in the article "Smart City: Tehran to be Smart", put that one of the new concepts to deal with the current challenges of cities in the field of urban planning is the development of smart cites with the qualification of integrating physical and virtual characteristics, and they do their research in this regard. Mutiara [5], in his article called "Smart Governance for Smart City", with the aim of defining the conditions of e-government based on the metrics of an intelligent government, discusses the situation of e-government in local government as part of a smart city. Pourahmad [6] in another article named "Explaining the Concept and Characteristics of the Smart City" state that urban planners around the world are trying to come up with models for the development of 21st century cities in order to respond new demands and expectations of today's world. Roustaei [7] in the article titled as "Study of the structural role of good urban governance in creating smart cities. Case study of Tabriz Municipality", state that in order to make the city smart, a suitable platform should be created in urban management. Anthopoulos [8], in a study entitled "Smart City and Smart Governance: Synonymous or Complementary?" conclude that the smart city is a complementary component and part of the smart government. Eremia [9], In an article entitled " The Smart City Concept in the 21st Century," state that the intense industrialization and growing population of urban areas has posed a challenge to city officials, engineers, and planners. Molaei [10], in their article "Explaining how to smarten cities in the context of effective components and key factors", state that the use of appropriate models is among the factors that can maximize the benefits of e-governments and smart cities, especially in developing countries. Adinehvand [11] in the article "Good Urban Governance in Iran: Prioritizing Components and Introductions", have stated that in order to achieve good governance, the component of the rule of law takes precedence over other components, and the other components as participation, justice, transparency, accountability, responding, efficiency and consensus come in following. Meijer [12] in a study entitled "Governance of a Smart City: A Review of Literature on the Governance of Smart City" has a review on existing academic topics related to good governance and smart cities, in which he gives an analysis of the issue based on 21 proceeding works. Although, all of these researches discusses the subject of smart cities in the context of good governance in one way or the other, none have studied or discussed the challenges of the Iranian government, as a developing country, in smartening cities by emphasizing the good governance model, with a case study of Tehran.

3. Necessity of research

Along with the development of urbanization and the social and economic developments of cities in Iran, both socially and economically, there are shortcomings in the field of city life, which in many cases are acute. The growth and expansion of cities has led to many urban issues such as housing, marginalization and informal settlements, urban crime, violence and urban unrest, drug addiction and trafficking, poverty, migration, environmental pollution, street harassment, unemployment and false employment,

vandalism, threats and insecurity in the city, begging, working and street children, divorce and traffic.

In such situation, the smart city has been considered as a strategy to reduce the problems made by urban population growth and rapid urbanization. This will be achieved in the form of good urban governance with characteristics such as accountability and transparency. Good urban governance allows for collaboration, exchange of information, integration of services and communications, and the use of new communication channels, such as e-government or e-democracy, which are among the most important necessities for the manifestation of a "smart city." [13]. Therefore, the requirements for building a smart city in the Islamic Republic of Iran based on good governance are among the most important and necessary issues in the development of urban development in its various dimensions. The manifestation of such cities in the Islamic Republic of Iran in general, and particularly in Tehran, which faces many urban problems, will be possible within the framework of good governance model through following its governing components in line with modern metropolitan management.

4.Theoretical framework

In regard with the theoretical framework of the present article, two important issues are pointed out. One is good governance and the other one is smart city.

4.1.Good governance

The term "good governance" is one of the words used by the World Bank and the International Monetary Fund two decades ago in a new sense. There are several definitions for good governance. The first Governance Conference defines good governance in the Manila Declaration as a transparent, accountable, just, democratic, participatory, responsible system for public needs [14]. United Nations Development Program (UNDP) defines good governance as the application of political, economic and administrative power in order to manage the affairs of the country. UNDP in its definition considers 9 characteristics for good governance which includes, participation, rule of law, transparency, responsibility, accountability, consensus, equality and fairness, efficiency and effectiveness and having a strategic vision [15]. The main goal of good governance is to achieve sustainable human development, which focuses on reducing poverty, job creation, sustainable welfare, environmental protection and revitalization, and the growth and empowerment of women [16]. In this approach, instead of mechanically emphasizing the privatization or expansion of market dominance, the need to address the mutual rights of citizens and governments, accountability of the government, increasing transparency, increasing the level of real participation and the development of civic institutions are emphasized [17]. The United Nations also addresses these characteristics in the following way.

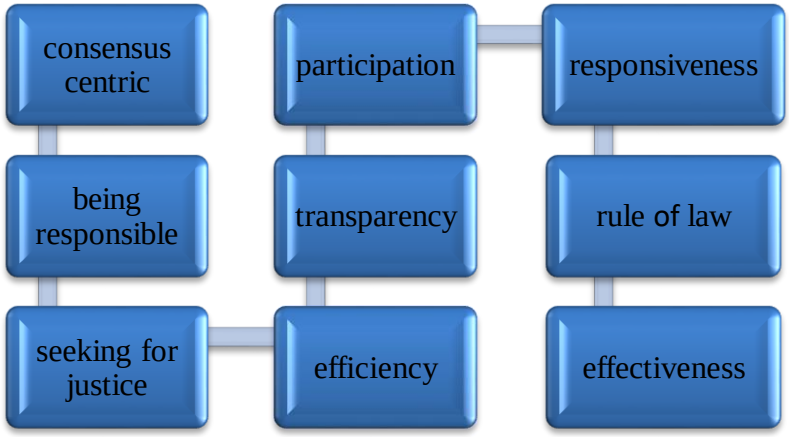

Fig. 1. Characteristics and criteria of good governance from the perspective of the United Nations

Good governance has six indicators as follows:
1. Protest and accountability: This index means the amount of ability of citizens of a country to determine and choose their government, or in other words the degree to which the head of state, government or other political officials in the country through free elections are chosen by the people.

2. Political stability and lack of violence: This index indicates the possibility of overthrowing a government and political system through illegal measures or violent means. The main discussion of this index is related to terrorism and violence. According to this index, the higher the probability of political instability in a country, the weaker the government, and the more politically stable a country is, the higher its score on good governance [18].

3. Government effectiveness: In this index, the quality of public services, the quality of bureaucracy, the competence of urban governors and the degree of independence of municipal services from political pressures are considered. Also, the quality of formulation and implementation of public and government policies, and the level of commitment that the government has to these policies are at the center of this index [19].

4. Quality of regulations: In this index, the concept of controlling prices, monitoring the banking system and issues such as not imposing pressure on business owners to develop trade is considered. In other words, this indicator refers to the government's ability to formulate and implement policies and regulations that expand the presence and activities of the private sector. The increasing presence of the private sector as a result of the implementation of policies formulated by the government shows better governance [20].

5. Rule of Law: The extent to which laws are real in a society and can be trusted to be enforced is assessed by this indicator. In this index, especially the implementation of contracts, the possibility of violent and non-violent crimes, the effectiveness and predictability of the performance of judicial courts in a society is considered [21]. The ways

in which the rule of law affects development include protection of property rights and the proper implementation of contracts, market development, and entrepreneurship.

6. Corruption control: The abundance of additional payments to do things is a provoking aspect in this field. In other words, corruption involves behavior in which those in power take advantage of their influence in the public sector for their personal interests. This index includes both minor and minor corruption [22].

Good governance emphasizes the cooperation between three institutions in the society which include Government, the civil society and the private sector. As a result of this partnership public affairs and public issues will be governed in a more efficient and optimal manner, and will pave the way for good governance in economic, political and administrative dimension [23].

4.2. Smart City

The smart city is a "city" based on information and communications technology , which has the ability to change lifestyles and type of performing the activities, responding citizen needs through programming, planning, developing and modernizing of societies, maintenance of natural and cultural resources, equitable distribution of costs and benefits of development, enhancing ecological integrity in the short and long term periods as well as increasing quality of life through the development of transportation, employment and housing in an authentic financial mechanism [24]. Also, the smart city is a city that monitors and integrates the conditions of all its vital infrastructures, including roads, bridges, tunnels, rails, subways, airports, ports, communications, Water, electricity, and even large buildings by optimizing its resources, planning its maintenance and monitoring security aspects while providing maximum services to citizens [25].

One of the most influential definitions of "smart city" in academic literature was presented by the Vienna University of Technology in 2007 [26], based on which the smart city is a city that is well on its way to advance in six features (smart people, smart mobility, smart governance, smart living, smart economy and smart environment), and is a smart combination of assets and decisive, independent and informed activities of citizens. In another definition, a city that connects physical infrastructure, information technology infrastructure, social infrastructure and business infrastructure to strengthen the city's collective intelligence is a smart city [27] Therefore, the smart city means using all available resources and technologies intelligently and harmoniously to develop sustainable, habitable and integrated urban centers [28].

4.2.1. The need to build smart cities

The Smart City Movement, which has been started since the early 1990s as a way to deal with potential future harms, addresses four key factors as a prerequisite for smart cities:
1. Earth heating and climate change: Climate change is clearly the result of changes in the ecosystem that pose numerous risks to society. Global warming raises ocean temperatures and eventually causes severe storms. Global warming and climate change are closely linked to greenhouse gases such as carbon dioxide and methane, which are often produced by industrial activities [29].

2. Population increase: According to the United Nations, population has grew from 2.5 billion in 1950 to 7 billion in 2011, and in a prediction it will grow near 9.5 billion in 2050 [30].

3. Increasing urbanization: Urbanization is growing rapidly, In developing countries, according to statistics, in 1990 the population living in cities was about 35%, which according to forecasts in In 2020, it will reach 51%, and 67% in 2050 [31]. This means that two-thirds of the world's population will live in cities. Urbanization will have negative effects such as increasing slums, air pollution, water scarcity, energy shortage, traffic, and insufficient wastewater and sewage treatment capacity. Developed countries, on the other hand, face new problems such as urban congestion and low birth rates and population aging.

4. Reduction of natural resources: Reducing natural resources and clean and renewable energy is one of the most important prerequisites for creating smart cities. From this perspective, the scattered production of energy in the form of Microgrids and the attainment of renewable and clean energy without environmental damage is in especial focus of the thinkers in this field. Also, the water crisis and the shortage of fresh water is a vital issue that has been brought to the agenda using water control and management tools in a completely smart way and with the least amount of error. So reducing resources and preparing for any damage in the future can lead us to create smart cities [32].

Each of the above four factors has played a major role in shaping the smart city movement, but the emergence of technology as a major player in the emergence of this concept plays a key role [33] . Physical network infrastructure [34], just like as fiber optic channels and Wi-Fi networks, public access points like wireless transmitters and kiosks, and information-oriented systems are needed for a smart city [35]. But in smart cities, technology alone cannot be enough. Hence a connected set of organizational, human, infrastructural, natural, and political factors are influential in creating these types of cities. So factors such as the emphasis on the role of human infrastructure, human capital, and education in urban development are also a necessity in the study of human factors [36].

Smart city is not just about technology [37], but it should create smart people, and this concept contains qualifications such as education, ethnic and social pluralism, flexibility, creativity, worldview, and participation in public life [38]. So the smart city will point to smart solutions by creative people. Besides, education can be introduced as an attractive factor. Businesses, organizations, and individuals with different backgrounds are attracted to dynamic and creative educational environments [39]. Therefore, cities should seek the help of people as human capital to make them smarter and avoid blind imitations of technology [40]. Today, this issue has been significantly recognized that in order to have a successful city interacting with people is a vital factor. In this regard learning should be used as a tool to facilitate development of information technology abilities, training educated staffs in this field, creating social leaning environments especially in schools, organizations and industries [41]. Some also believe that the preconditions for creating a smart society is, smart transportation, smart economy, smart living, smart environment and smart management, expertise of officials and changing the processes of working in the

municipalities. They argue that the success of the smart city is not only possible with capital and technology, but also with the leadership of the community and intra-group cooperation under the guise of good urban governance.

In smartening the cities, three components of people, institutional and infrastructural factors, and three factors of intelligence, innovation and integration are considered as key factors. In other word the urban intelligence is created from the integration of three factors of individual intelligence, collective intelligence and artificial intelligence [42]. In this regard digital infrastructures and technologies act as facilitators of human and collective intelligence and play a key role in the process of smartening cities and societies.

Having a smart perspective is not enough to be smart alone, and action is needed in the areas of legislation, policy, and organizational change. Therefore, emphasizing the rule of law and participation are more effective than other components in good governance. Deficiencies in the rule of law and low participation are the main challenges for good urban governance in Iran; As a result, city management must begin with the idea of maximizing community participation to reduce political preferences. The priority of the rule of law over participation among the components of good urban governance is visible, because it is in a legal context that a municipality can provide an improving situation for itself. Other components are in the context of the so-called rule of law that makes sense. The smart city, however, is not a luxury commodity or an opportunity, but a necessity for governing the future of the city that must take place. The components and features of Smart City are summarized in Figure 2.

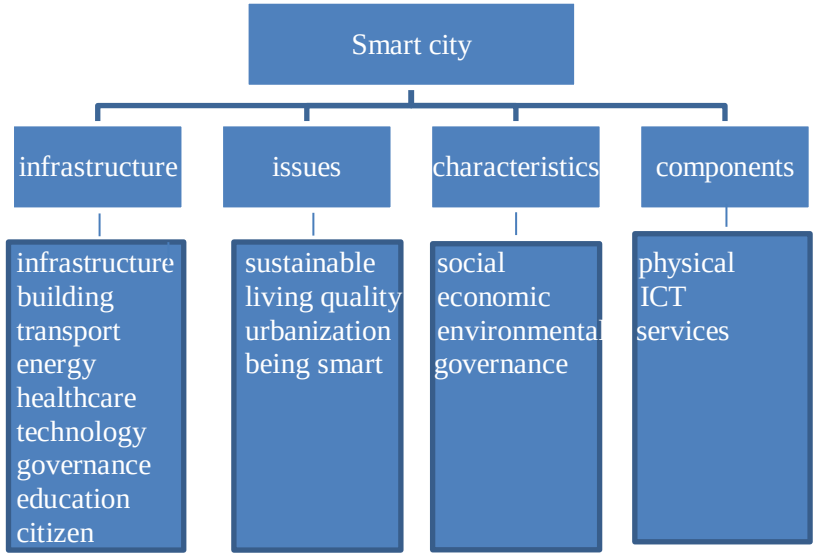

Fig. 2. The components and features of Smart City [43]

4.2.2. Challenges of a good governance model in creating a smart city

There are many criticisms and challenges to good governance, which are mainly based on four issues that are interconnected and intertwined in various dimensions. Size of the

government, lack of access to leadership for citizens, shifting of collective goals to the individual goals of politicians, and conflicting nature of governmental institutions and organizations are the most important challenges in implementing a good governance model. To be more precise, by solving each of these challenges, the ground will be paved for solving other challenges and obstacles. The necessities and requirements of a smart city is shown in (Figure 3).

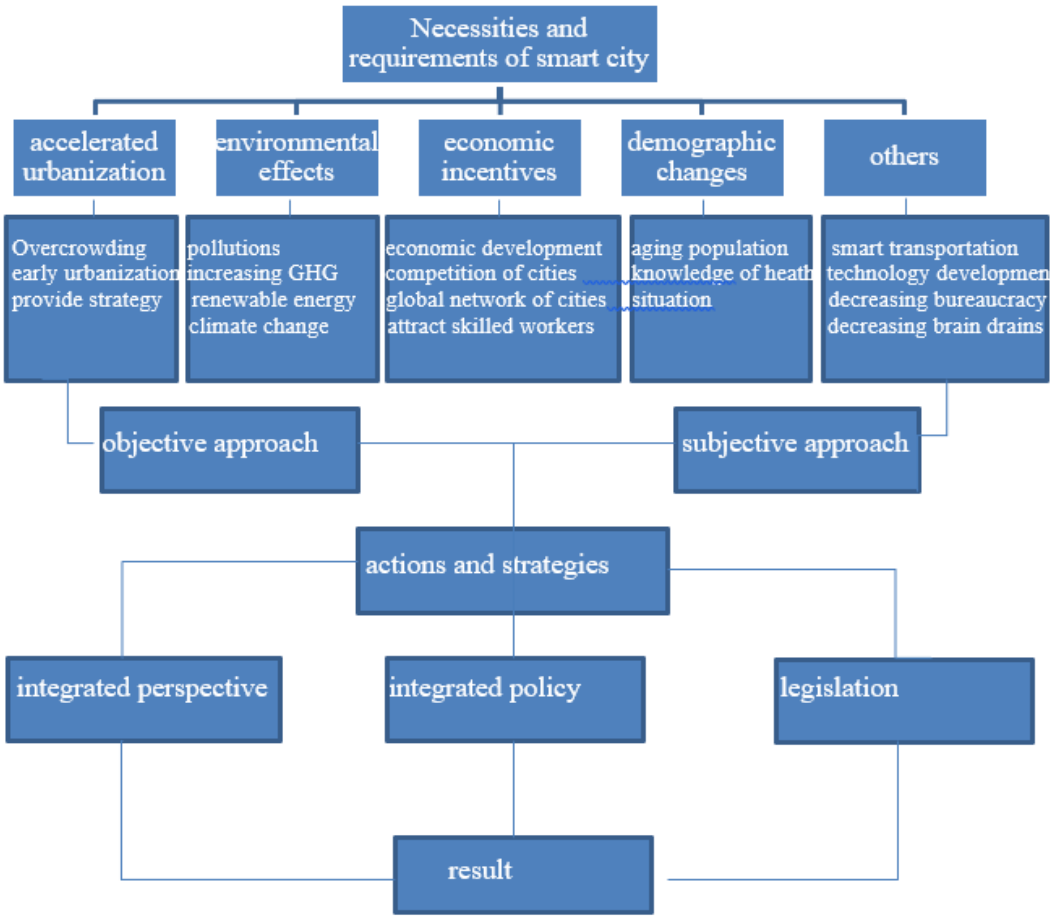

Fig. 3. Necessities and requirements of smart city [44]

5. The goals of creating a smart city in Iran

The ultimate goal of creating a smart city in Iran, as well as in other parts of the world, is to provide smart services in all vital urban capabilities. A look at smart city projects in other parts of the world [45] shows different goals; But in general, the goals of creating a smart city in Iran include reducing carbon dioxide, achieving energy efficiency, achieving the influence of communication and information technology in the development of specific industries just like as multimedia or knowledge-based industries, achieving a living environment with the highest quality for the residents, developing green spaces inside the city, developing accessible advanced information infrastructure, achieving economic growth and quality of life simultaneously, developing of sustainable societies, Ensuring

social adjustment between different groups of residents, and evolution of the city for continuous improvement.

5.1. Smart city challenges in Iran

The most important challenges facing smart cities in Iran especially in Tehran are as follows (although some of these challenges are general and some are specific.):

1. Competitiveness and inability of cities to compete on a global scale according to the global connection of cities [46];
2. Lack of necessary financial capacity to implement smart city projects [47];
3. Complex context and the need to accompany political agendas [48];
4. Innovative projects and small-scale developments do not necessarily guarantee effective implementation on a larger scale than in the city [49];
5. The possibility of failure in investments and ignoring local needs and priorities [50];
6. Slow progress of projects due to budget issues and failure to attract residents or capital [51];
7. Unique focus on productivity can lead to a limited view of social values such as social cohesion and quality of life in the city and the dimensions of sustainability [52];
8. Repetition of technologic solutions requires risk. The same solution may not be appropriate for all cities [53];
9. The ecosystem, people, institutions and shareholders, requires a lot of effort to be organized [54];
10. The infrastructure of existing smart cities can be old and obsolete and hinder the manifestation of the smart city prospective [55];
11. Existing cities have a lot of problems and are in a competition with other cities to get a share of resources. Therefore, it is not possible to address all aspects of a smart city. Strategies should be based on priority;
12. The risk of social disagreements just like as social inequalities among various groups, unequal knowledge and access to Information and Communication Technology, digital gap, and social gap expansion, is one of the other challenges of smart cities [56]. Technological advances and the complexity of cyberspace perpetuate inequality within sections of society [57];
13. Issues and problems related to privacy and collection of personal information, security, surveillance and excessive control over citizens are one of the most important challenges in smart cities [58];
14. Lack of trained staff and the need for frequent updates [59];
15. Lack of equal access to cyberspace and uncertainty about the accuracy of large volumes of data and information [60].

The challenges of creating smart cities are quite diverse and complex. A number of these challenges just like as cost, efficiency, sustainability, communications, safety and security are common among all the world's smart cities. These challenges are driven by factors such as the natural environment, government policy, social associations and the economy. Cost is the most important factor in smart city design and implementation. Cost includes design costs and operational costs. Design costs are an initial cost of smart cities. But the operational cost is the cost of maintaining a smart city. For a smart city to be created in the first steps, the cost of design must be low. At the same time, low operating costs make it

possible for cities to work in the long run with minimum budget. Cost optimization during the life cycle of a system in a smart city can be challenging. Smart city utilization efficiency is considered an important challenge. Higher efficiency reduces operating costs, as a result of which the sustainability of smart cities improves. Reducing carbon dioxide emissions and urban waste is essential to increase sustainability and efficiency, as well as reducing operating costs.

In this regard, smart cities should be compatible with population growth while ensuring long-term sustainability. Smart cities must be resilient to disasters and failures. Failure in accomplishment of the smart cities can occur for a number of reasons, such as information and communication technology failures or cutting of electricity. Natural disasters can also lead to the failure of various components of smart cities. In any smart city design, these disasters and failures must be taken into account so that smart cities can recover quickly from such situations in the shortest possible time. Design and operating costs in smart cities are affected by these challenges. In this regard green and renewable energy sources such as solar and wind energy can be very helpful. Challenges of designing a smart city can be counted as intelligence security, reliable communications, resistance to natural disasters, development of the cities, carbon dioxide emission, supplying energy of the operation, designing costs, public safety, information volume, system failure, urban sustainability, urban waste, and operational cost.

Iran's metropolises face numerous challenges including transportation and traffic, air and environmental pollution, unauthorized construction, limited leisure and recreational facilities [61]. Also, the quality of urban management in resolving, inter-city problems such as housing, unemployment, marginalization and slum, security, density and congestion and providing stable incomes for the city, are other challenges of smart city in Iran and Tehran. . Tehran as the capital of Iran and the largest city in the country, with a population of over8693706 and 14.7% of the country's urban population in 2016, which turns it in to largest pole of population in the country, and due to its transnational role, has a special place among the cities of Iran [62].

5.2. The challenges of making Tehran smart

Despite existing challenges, the increasing population of Tehran and the need to use ICT services to meet the needs of its residents requires a systematic planning. Therefore, smartening the city of Tehran is considered a kind of necessity and need. in addition to above mentioned challenges which are more or less general, Tehran faces specific challenges as follows [63]:

1. Lack of integrated urban management in the smart city of Tehran,
2. Lack of metropolitan perspective in planning, decision making, implementation and supervision, in smartening the city of Tehran.
3. Challenges to determine goals and policies for smartening and determining the scope of smartening,
4. Challenges to determine the risks of smartening Tehran,
5. Challenges to determine the appropriate infrastructure of smart city challenges in Tehran
6. Challenges to determine the role and duties of stakeholders in planning and implementing smartening of Tehran,

7. Lack of desire of agencies and institutions to share information and knowledge in Tehran,
8. Lack of sufficient participation of citizens in Tehran,
9. Challenges to supply the needed foreign investment in Tehran,
10. Restrictions and legal requirements in Tehran,
11. The need for Tehran's trade relations with neighboring countries and other parts of the world,
12. The need to use the experiences of other cities and companies in the world in the field of smartening,
13. The need to use global methods and emphasize the transfer of knowledge

The smart city wants smart citizens first and foremost. Because city and the citizen are always interacting with one another. A smart city needs more than just citizens. Therefore, a communication strategy with the citizens should be developed, according to which the benefits of the plan reaches not only the whole city, but also every single citizen. For example, citizens may resist smartening Tehran because one of the issues in smart Tehran is changing lifestyles and consumption patterns and issues related to the future generation. The structure of a smart city must first be established in the body of society and in the daily lives of citizens. Therefore, responsible organizations should guide the society in such a way that the desired behavior and lifestyle appear among the citizens. Therefore, another challenge of the smart city of Tehran will be the challenge of culture building. The issue of culture-building to use technology is an important issue for smart city professionals. As a result, the smart city needs a culture that is in the realm of smart culture.

6. Smart city and good governance in Tehran

Today, e-government, which is itself the prelude to smart city governance, is being considered as a powerful tool for accelerating and quickly gaining access to good urban governance. Electronic governance and the use of information and communication technologies by the public sector in order to limit the provision of services, encouraging citizens to participate more in decision-making and increasing the components of accountability, transparency and effectiveness in government are among the strategies to reach the smart city. According to researches, the smart city should be considered as a powerful tool for accessing good urban governance. In other words, one of the most effective ways to achieve good urban governance is to use the smart city. The indicators of urban smartening that can affect urban-good governance in Tehran is shown in figure 4.

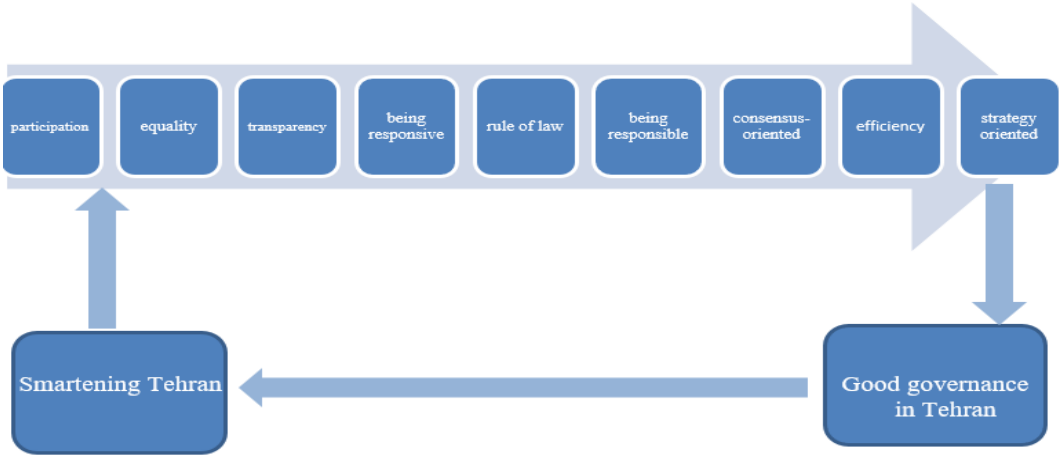

Fig. 4. Indicators of urban intelligence affecting good urban governance in Tehran

7.Conclusion

Building a smart city requires integrated measures at different levels of the municipality and social context. Smart city is a key concept that aims to address contemporary challenges and take advantages of the recent opportunities offered by the advances in information and communication technology and urbanization. Despite the extensive literature on the concept of the smart city, there is still no clear conceptual and general consensus, and researchers in various fields of science have offered a variety of definitions. While some consider smart technology to be the only or at least the most important component of a smart city, others have come up with definitions that go beyond technology. Technologies can be used in cities to empower citizens by adapting these technologies to their needs rather than adapting their lives to the requirements of technology.

Having the needed infrastructure is vital in smartening the cities. Processes and how a smart city is created also should be considered in designing smart cities. A smart city should anticipate smart economics, smart governance, smart mobility, smart environments, smart people, smart living, and h ow to create interaction between them. But having plan alone is not enough, and action is needed on legislation, policy, and organizational change. Smart city planning in different countries shows that huge investments have been made and are needed to create a secure solution to the problems posed by urbanization and the environment.

Smart cities, through institutional and organizational assistance and the creation of a transparent structure within the government, decided to create a clear strategy and vision in the form of long-term programs. Despite the numerous challenges and key obstacles ahead, all countries, including Iran, agree on the concept that all actions taken in this channel should be beneficial to the citizens and more than that, the well-being of the residents. This progressive and wise approach, when combined with technical and modern infrastructure, will be a perfect product with useful operational mechanisms for the people, and this will not be possible without good governance.

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