

# Ranking the Obstacles of the Establishment of Integrated Urban Management in Tehran Municipality Using MCDM Technique

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Received: November 13, 2015

Accepted: April 5, 2016

Online Published: June 5, 2016

doi:10.5539/mas.v10n8p48

URL: <http://dx.doi.org/10.5539/mas.v10n8p48>

## Abstract

Tehran municipality is a nongovernmental organization to which many responsibilities have been added during the years; but the structure and the processes which are predominant in Tehran municipalities and the municipality of other cities is the same basic structure to which some more complicated processes have been appended. Integrated urban management is a solution which has been adopted in many developed countries to solve the problems of municipalities and has decreases the interference of municipality responsibilities with other governmental organizations. It is such a long time that Tehran municipality has started studying the establishment of integrated urban management and published different papers on this field. Anyway, there are some obstacles in the establishment of integrated urban management and it cannot be realized without fully knowing them and programming on their elimination. The present paper first recognizes the obstacles of establishment of integrated urban management and then ranks them through using MCDM techniques. 19 factors have been recognized as the obstacles of the establishment of integrated urban management and then ranked in three different categories titled legal obstacles, environmental obstacles and executive obstacles. The data have been collected using TOPSIS technique and a ranking of above mentioned factors was finally presented.

**Keywords:** integrated urban management, Tehran municipality, MCDM, TOPSIS

## 1. Introduction

Urban management is composed of a collection of tools, activities, responsibilities and functions which ascertain that the basic services of the city should be appropriately formed for different groups, people and local and public associations (Acioly, 2003). Urban management can be compared to a tree whose different parts are connected and dependent on each other and their mutual interactions are specifically systematized (Dussney, 1991). The concept of integrated urban management, created in order to remove the inefficiency of the traditional urban management in solving the city problems while the city challenges like poverty, social anomalies, insecurity, traffic, unemployment, marginalization, social gap and etc. were increasing, was added to the urban management to emphasize the word 'integration'. One of the main problems of traditional urban management is the critical theory of high responsibilities of the governments and the urban management of a government which believed in it. The government gradually started to take more responsibility of managing the society including the public administration which exceeded their financial and administrative capabilities (Yann, 2009).

Inspiring by great urban governance, integrated urban management consists different parameters like efficiency, transparency, partnership; people's right of commenting, justice, knowledge base and etc. proceeds to improve the urban environment and solve various urban issues like illegal settlement using other urban organizations support (Chakrabart, 2001). Establishing the integrated urban management, the smaller organization not only isn't dominated by the bigger urban management but also can be a part of administrative structure of the city while cooperating with the big organization and being more functionally independent. Unlike the traditional systems in which the decision making was exclusively in the hand of specific people or group (usually the government), the modern integrated urban management system let the urban beneficiaries participate in all the urban management processes. This concept consists of all the effective formal and informal organizations in the urban management which somehow interferes with the decision making and running the urban management

programs (Kazemian, 2011).

It is a long time that Tehran municipality started studying the establishment of integrated urban management and so many different papers have been published in this regard. There are some obstacles in this way; the establishment of integrated urban management cannot be realized without knowing and solving these problems. The main issue of the present paper is to recognize the most important obstacles of the establishment of the integrated urban management and to rank them. Therefore, the present paper starts recognizing the obstacles of the establishment of the integrated urban management of Tehran and then prioritizes them.

## **2. Literature Review**

### *2.1 City and Urban Management*

Regarding the hierarchy and the decision making processes, city doesn't greatly differ with other organizations, but what varies the city with other organizations is the complexity, eminence and the number of its factors (Mir Abedini, 2009). Managing the highly complex systems requires strategies, systematic approach and the recognition and guidance of the related elements according to the regulations and analyses of this strategy (Kazemian, 1994).

City is a live complex and this live complex should be managed integrated. It is not possible to deal with the problems of a part and leave the other parts. If some parts are managed by an organization and the other remaining parts are administered by another organization, the city will be soon perished. According to Munford, city is a geographical network, economic organization, industrial process, social interaction scene and an aesthetic symbol of social unity (Latifi, 2005). Modern urban management is the process of creation, execution, coordination and evaluation of integrated strategies using urban authorities and considering the operative goals of private section and citizens' benefits in the political frame which should be codified in the upper levels of the government in order to realize the sustainable economic development (Barak Pour and Asadi, 2009). Sarrafi and Abdollahi (2008) believe that if we compare a city to an organization, it is necessary appoint an element on the top to plan the future and manage the present affairs. This element can be called urban management (Sarraf and Abdollahi, 2008).

The findings of the researches and studies on the management of the megacities demonstrate that there isn't a specific approach to manage all the megacities all over the world and this issue depends on different factors of the relationship of power and political system of the country, national and regional culture and so on. Furthermore, regarding different definitions of megacity and the fact that each country has its own specific definition, the managers cannot follow one specific approach to run the megacities all over the world (Rahmanian, 2008).

### *2.2 Integrated Urban Management*

Integrated urban management is an issue from which many different factors like local government, functional and political segregations of the city, city power system and the one who play a role in it, stem. The goal of the urban management is to ascertain that different systems of the city be managed in a way that provides the possibility of the daily functions of a city and it results in the facilitation and encouragement of all the economic activities and make the citizens capable to meet their basic needs of shelter, accessing to services and facilities and money making opportunities. Considering the increasing complexities of integrated urban management Churchill (1985) states that "urban management' is moving toward a richer and newer meaning. It doesn't imply the controlling systems anymore, but it is a complex of behavioral communications. It is a process through which the citizens' activities interact with each other and also with the city government". It is clear that one-dimensional interference has been substituted with a more complicated and more accurate thought when facing with city development that shows where the city management starts and where it finishes.

Integrated and coordinated city management led by the municipality and the relevant organization (including governmental and non-governmental organizations) and under the local supervision and policy making of city council is the intended general pattern of the codification of the municipalities' responsibilities. The lack of existence of such a great coordination between the organization, the efficiency and effectiveness of the taken measures to manage the city affairs and develop the city are pretty controversial and doubtful. Regarding the same frame, the space comprehensiveness, municipality function and city management are of necessary principles of controlling the entire city environment and the living dimensions of the city (Kazemian, Saeidi and Rezvani, 2004).

It seems that in most parts of the city, the governmental and private sections tend to function separately instead of coordinating to solve the problems. Each governmental office or scientific system focuses on a small part of

city configuration. Obviously, disregarding the public transportation or job opportunities and ecosystems innovations and training courses, the housing planning not only doesn't solve the problem but also intensifies it. The coordination mechanism rarely exists among the offices and the universities seldom present scientific training course for their systems. The coordination among the intra-levels of government affects planning and its relative success, therefore, some of the levels of the governments act more coherently (Newman and Turnly, 2007).

### 3. Methodology

The methodology of the present paper is categorized as descriptive which is a sub-branch of field research and the data have been extracted from databases. Therefore, the data and their collection method are fully valid and reliable and since the data have been collected inside the society, the researcher has used sampling.

Since the goal of the present study is to rank the obstacles of the urban city management of Tehran municipality, the research is applicable and it is among the analytical researches which aims at developing the practical knowledge of a specific field and leading the research to practice the knowledge in the society which first benefits from library method, studying the documents, holding meetings and using the managers' and experts' idea and then starts doing the research and presents the desired model.

#### 3.1 Research Plan

There are two kinds of variables in this research: dependent variables and independent variables. The independent variables include the existing obstacles when making and applying the integrated urban management in Tehran and the dependent variables are applying the integrated urban management in Tehran.

Considering above mentioned information about the past researches and also the interviews done with the members of city council and other experts, the obstacles of making and applying the integrated urban management were recognized by the researcher. Then the obstacles were separately ranked, in which category there are some factors.

Using the variables, the conceptual model of the research was made. Since all the experts are going to comment on the variables of the research and value the importance of each obstacle, so each person can be regarded as an index and each obstacle can be named an option. So we can structure the decision making matrix which has 3 classes of options and there are some options in each class (the matrix rows) and the matrix columns are the experts or the decision makers (DMs). The decision making matrix is shown in the table below.

Table 1. The Research Model according to TOPSIS Model

Obstacles Ranking	Obstacles/ Experts	Expert no 1	Expert no 2	...	Expert no n
Legal Obstacles	Lack of existence of specific regulations and process to define and implement the integrated urban management				
	The interference and conflicts in executing urban activities				
	Lack of existence of legal necessities				
	Lack of existence of consistency in executing the related rules				
Cultural Obstacles	Lack of existence of policy making institutes for executing the integrated urban management				
	People's lack of knowledge about integrated urban management				
	People incredulity in the necessity of execution of integrated urban management				
	Non-cooperation of effective governmental managers because of the conflicts that may exists with their individual benefits				
	Citizens and organizations' (private section) lack of information or cooperation				
	Not being able to do the teamwork				
	The problems existing among the organizations				

Executive Obstacles	Twosome management of some sections in the process of execution
	Organizational problems in the codification and execution of defining responsibilities and duties
	The management, control and monitoring problems while executing the integrated urban management

The empty cells of the table would be filled with the experts’ ideas on the strength and weak points of the intended obstacle. The matrix forms the problem and it should be analyzed in order to be able to rank the obstacles.

3.2 Research Domain

The population of the present research includes the experts who have knowledge and experience in the management of Tehran. Since the integrated urban management has not been implemented in this city, so we are going to talk about an issue which has not been invented yet and the research data cannot be collected through observation or measurement of real variables. The number of the experts in the middle or high levels of Tehran municipality is estimated to be 200 people. Among them, 52 people are selected according to Morgan table. The sampling method will be done through simple random sampling. Simple random sampling has been selected because the selected people are not always available or sometimes don’t tend to answer the questions.

3.3 Data Collection Method

The required data of this research can be classified into two categories as follow:

- The basic and scientific information about the approaches and techniques used in the research
- Some information in the form of data which are needed as the input or output of TOPSIS technique.

Thus library approach like using the books, papers and websites are used to collect the first category information and interviews and questionnaires are used to collect second category data.

3.4 Data Analysis Method

Since TOPSIS technique is going to be used in this research, the related calculative computer program like Excel or SPSS are also employed. The calculations and calculative regulations are extracted from TOPSIS which has a scientific base.

4. Problem Solution and Data Analysis

To solve the TOPSIS model, it first requires each index weight to be calculated by Entropy technique. The logic of the calculation of the technique tells us that each index which can create more differentiation between the options, benefits from having more weight. This means that each expert who has used more various values in expressing the importance of the obstacles has been more accurate in the evaluation and thus his idea is of higher value while doing the calculation. The table below demonstrates the weight of each respondent to the research questions.

Table 2. The Experts’ Weight Calculated through Shannon Entropy

Expert no 1	Expert no 2	Expert no 3	Expert no 4	Expert no 5	Expert no6	Expert no 7	Expert no 8	Expert no 9	Expert no 10	Expert no 11	Expert no 12	Expert no 13
0.0431	0.0177	0.0349	0.0608	0.0317	0.0291	0.0385	0.0487	0.0131	0.0521	0.0463	0.0325	0.0441
Expert no 14	Expert no 15	Expert no 16	Expert no 17	Expert no 18	Expert no 19	Expert no 21	Expert no 21	Expert no 22	Expert no 23	Expert no 24	Expert no 25	Total
0.0344	0.0276	0.0298	0.0211	0.0562	0.0751	0.0841	0.0303	0.0325	0.0592	0.0276	0.0298	1

The weights mentioned in the above table are used as the input to solve the TOPSIS model. Normalization of the decision making matrix by Euclidian norm and multiplying each column in the related index weight would be the next step in the TOPSIS calculation. Determination of positive and negative ideals would come afterward. By definition, positive ideal is an option which is recognized as the best option by all the indexes. The positive option rarely externally exists and therefore it is called an ideal. Negative ideal opposites the positive ideal and is regarded as an anti-ideal by all the experts. The next step allocated to calculating the Euclidian distance of each option from the positive ideal ( $d^+$ ) and the negative ideal ( $d^-$ ). Basically, an option would be premier which has a

low distance from both positive and negative ideals.

Finally the relative proximity index from the positive ideal is calculated for each option. According to the definition, the more relative distant each option could be from the negative ideal, the premier it would be. Using the relative proximity index from the positive ideal, the options can be ranked. It is shown in the third table. It should be noted that each obstacle is marked in order to prevent the repetition of long phrases. The obstacles have been marked from A1 to A19.

Table 3. Ranking the Options according to Relative Priority Index of TOPSIS

Relative Priority index	Obstacles	Obstacles' Code
0.763246076	The interference of the responsibilities in the government and municipality (functional disunity)	A16
0.712694125	Lack of existence of legal necessities and execution warranty	A3
0.693977415	The interference and conflict of existing regulation in operating the urban activities	A2
0.690075293	Lack of existence of specific regulations and processes	A1
0.683556241	The conflicts among the centralist governmental managers and municipality managers	A8
0.659289028	Nature conflicts of local governments with execution system	A9
0.608214563	Lack of existence of information infrastructures and lack of existence of communication among the organizations' databases	A13
0.597078838	Indecisiveness of the managers in executing the regulations	A4
0.596138506	Indetermination of the organizations structure and intra level and inter level organizational communications	A17
0.593584488	Management and observation disintegration	A18
0.589592938	People's incredulity in the necessity of execution of integrated urban management (perspective)	A7
0.565731949	Lack of existence of necessary tools and processes	A14
0.549486077	Existing problem in the inter-organizational communications (technology)	A15
0.546357188	People' lack of knowledge about the integrated urban management (Knowledge)	A6
0.472946431	Citizens lack of knowledge or non-cooperation with the organizations (private sections)	A10
0.44993185	Lack of existence of highly motivated experts (skills)	A11
0.441939538	People's low level of social life	A12
0.331148344	Lack of existence of legislative and executive institutes	A5
0.268925468	Not allocating enough budget or not budget at all	A19

As it can be observed, the factor of interference of the responsibilities of the government and the municipality (functional disunity) is known as the biggest obstacle and other factors of lack of existence of legal necessities and execution warranty and also the interference and the conflicts of the regulations in operating the urban activities are next important obstacles of achieving the integrated urban management. It is also shown in some cases that relative proximity index to the positive ideal has a very slight difference in the consecutive options while in some other items, the difference is really too much. So the ranking done in the previous table does not equally differentiate the options. Therefore, the consecutive options with slight difference are categorized in one class. Consequently, this categorization leads to the creation of classes of factors and each class is put in a rank. Table 4 shows this issue.

Table 4. Ranking the Options according to TOPSIS Technique

Real Obstacles	Obstacles	Obstacles Codes
1	The interference of the responsibilities in the government and municipality (functional disunity)	A16

	Lack of existence of legal necessities and execution warranty	A3
2	The interference and conflict of existing regulation in operating the urban activities	A2
	Lack of existence of specific regulations and processes	A1
	The conflicts among the centralist governmental managers and municipality managers	A8
3	Nature conflicts of local governments with execution system	A9
	Lack of existence of information infrastructures and lack of existence of communication among the organizations' databases	A13
4	Indecisiveness of the managers in executing the regulations	A4
	Indetermination of the organizations structure and intra level and inter level organizational communications	A17
	Management and observation disintegration	A18
	People's incredulity in the necessity of execution of integrated urban management (perspective)	A7
5	Existing problem in the inter-organizational communications (technology)	A15
	People' lack of knowledge about the integrated urban management (Knowledge)	A6
6	Citizens lack of knowledge or non-cooperation with the organizations (private sections)	A10
7	Lack of existence of highly motivated experts (skills)	A11
	People's low level of social life	A12
8	Lack of existence of legislative and executive institutes	A5
	Not allocating enough budget or not budget at all	A19

## 5. Discussion and Conclusion

The obstacles of the establishment of integrated urban management of Tehran were studied. The main measures taken by the researcher were 1). Recognizing the obstacles, and 2). Determining each factors effect comparing with other factors and ranking them according to their level of importance. Ranking the factors was done using the multi-criteria decision making policies. The related documents and the previous researches were fully examined to recognize the above mentioned obstacles and to complete the present research, experts' ideas were also employed. Finally 19 factors (obstacles) were recognized which were categorized in three different classes. To determine the importance of each factor, a questionnaire was distributed among the experts and then TOPSIS, which is one of the most useful techniques of MADM, was employed to rank the factors.

19 factors were recognized while answering the first question "what are the obstacles of the establishment of the integrated urban management in Tehran municipality" and then they were categorized into three different classes. The obstacles are shown the figure below.

Not Achieving the Integrated Urban Management		
Execution obstacles	Environmental Obstacles	Legal Obstacles
<b>The problems existing among the organizations</b>	People's lack of knowledge about integrated urban management	Lack of existence of specific regulations and process to define and implement the integrated urban management
<b>Twosome management of some sections in the process of execution</b>	People incredulity in the necessity of execution of integrated urban management	The interference and conflicts in executing urban activities
<b>Organizational problems in the codification and execution of defining responsibilities and duties</b>	Non-cooperation of effective governmental managers because of the conflicts that may exists with their individual benefits	Lack of existence of legal necessities
<b>The management, control and monitoring problems while executing the integrated urban management</b>	Citizens and organizations' (private section) lack of information or cooperation	Lack of existence of consistency in executing the related rules
	Not being able to do the teamwork	Lack of existence of policy making institutes for executing the integrated urban management

Figure 1. First Question of the Research

The question of the research was about “the importance of the above mentioned factors and their ranking compared with each other”. The TOPSIS methodology was used to calculate the ranking of the above mentioned obstacles. Another analysis which can be done on the result of the ranking is to calculate the importance of each class. It means that we can say which legal, environmental or executive obstacles have mostly affected the non-realization of an integrated urban management in Tehran municipality. Therefore, the mean of index for all the options of each class is computed and the achieved values will be regarded as the priority value of that class. The calculations have been reported in the table below.

Table 5. Determination of the Importance of triple classes of the Obstacles of the Disestablishment of the Integrated Urban Management

Obstacles Ranking	Factor Code	Relative Priority Index	The importance of the Class
Legal	A1	0.690075	0.604995
	A2	0.693977	
	A3	0.712694	
	A4	0.597079	
	A5	0.331148	
Environmental	A6	0.546357	0.549088
	A7	0.589593	
	A8	0.683556	
	A9	0.659289	
	A10	0.472946	
	A11	0.449932	
	A12	0.44194	
Execution	A13	0.608215	0.563618
	A14	0.565732	
	A15	0.549486	
	A16	0.763246	
	A17	0.596139	
	A18	0.593584	
	A19	0.268925	

As it is observed, the first class is more important and the second and third classes have less (somehow equal) importance.

Considering the importance of each obstacle, the main suggestion is to plan to remove the obstacles according to the presented priorities in this paper. So, the most important recommendation of this research to the decision makers of Tehran municipality is to:

Remove the legal obstacles to achieve the integrated urban management. The most important obstacle of this field is the lack of existence of legal necessities and execution warranties to establish the integrated urban management. It means although so many rules and regulations have been legislated and presented to different organizations to execute, the lack of existence of legal necessities and execution warranties led to non-execution of the approved laws. So the above mentioned obstacle should be removed before approving new rules.

Although the interference of the responsibilities of the government and the municipality (functional disunity) isn't classified as a legal obstacle, it is known as the most important factor of the whole obstacles. This means that before doing the first suggestion of the research, the interference of the responsibilities of the government and municipalities should be noticed. This fact stems deeply from the current executive system of municipality and the solution doesn't lie in a simple strategy. It is suggested that common committees with the presence of municipality managers, governmental and political managers be formed and then the necessary decisions are made by them.

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