

# Assessment of the Effects of Megaprojects Implementation on the Quality of the Surrounding Environment (Case Study: Velayat Park in Tehran)

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Recieved 10.04.2018 ; Accepted 13.11.2018

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**ABSTRACT:** Development of science and technology and growing trend of globalization has pushed the urban communities toward competition on absorbing foreign capitals and construction of macro-scale projects. This competition has affected not only developed countries but also developing countries such as Iran- since it is expected that each urban development will finally result in an increase in the quality of housing environment and suburbs, constructing macro-scale projects will be justified if they lead to increasing the quality of the housing environment and the suburbs. Accordingly, present study focuses on identifying the effects of Velayat Park (as a mega- project on the quality of the surrounding environment: The indexes of environmental quality were considered using library studies and world literature review. Identification and method of assessing indexes and the satisfaction of the residents. The analysis of the results was carried out using statistical methods of Gama test analysis through SPSS software.

**Keywords:** *Assessment of environment quality, Mega project, Assessment of effects, Velayat park*

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## INTRODUCTION

We have witnessed the increase in the tendency of urban management (in developed and even in developing countries) toward creating appropriate opportunities for economic growth of the city (and job creation) in recent decades. The age, when the cities experience intensive competition for absorbing capitals and creating employment. Here, we witness the implementation of large - scale projects that were first started aiming at globalization of the cities and absorbing the world capitals during the competition, but it gradually extended the domain of their aims and performances in addition to being one of the major bases of urban strategic marketing and accelerating economic growth and renewing urban life and creating new exciting spaces in the city and in fact along with the universal aims, it attempts promote the economic conditions and the quality of the residents, life. This trend of investment has started in recent years that consists of a lot of projects such

as Persian gulf lake matyres of - Tehran, Tehran Megamal , Mojhaye Abi Mashhad , Mashhad shohad square complex (as the second two- story plaza of the world), Tehran Velayat park and so on . These type of actions have considerable effects on world markets, economy of countries and financial capitals on one hand, and change in the patterns of residence and the activities of the local residents, on the other hand.

## Statement of the problem

The issue raised here is that in such projects that aim at economic development and renewal of urban life, to what extent the local people and neighborhood are paid attention to. Paying attention to local neighborhood and daily growth of people's strategies in urban planning is among the issues that have entered into the literature of development and turned into one of the important aspects of urbanization plans and programs. Ignoring the effects that these project have on the different aspects of local residents lives will lead to not only

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urban decline and a decrease in different aspects of life in terms of life quality but also the success of the project.

### **The Importance and Necessity of the Issue**

With daily growth of people-oriented strategies and attention to local neighborhood in the development and renewal of economic structure of the city, applying this policy has encountered challenges in the academic community and a large number of critics confess that the addressee aimed by this project are generally out of the considered realm (investors, tourists, potential rich residents and local residents are less addressed. Indeed, these large - scale urban projects are rather site-orientate than focus on promoting the economic conditions and the life quality of the local residents and attempt to absorb investments, attracting rich local residents to the city through developing estates or creating a confident basis for tourism. In contrast, the urban managers and supporters of this policy use it for solving the issues related to unemployment, urban decline, reduction in the value of estates and undesirable mental picture and claim that profits obtained from this project result in promoting the life quality of local residents and enjoyment. -Therefore, it seems that more studies are needed into this developmental dominating trend and its effects domain especially the local economy. In fact, in addition to finding the weak and strong points the projects toward presenting modifying plans, a step could be taken toward improving the performance of future projects and plans by assessing the degree of success of present projects.

## **MATERIALS AND METHODS**

### **Reviewing the Literature on Megaproject Definition**

Different expressions have been used in academic literature to describe large projects such as complicated projects, important projects, huge projects, flag projects and megaprojects. Many researchers have defined this term and Numerous articles have been written on the megaprojects specially in recent years." megaproject refers to very large investment projects. Also, many article have been written about very large infrastructural and utility projects with costs over one billion dollars in America or projects with high investment volume that have attracted the public attention and have been defined (due to their basic effects on local communities, bio-environment and economy and budget either directly or indirectly ).Of course, the use of the them megaproject depends completely on the field where the projects is performed ; for example, a project that is called by this name in an average city, will not necessarily this feature in a mega-city (flyvbjerg,2004). Megaproject can also refer to physical innovations that are very costly and have public application. These projects include: bridges, tunnels, highways, airports, power plants (stations), public building, large scale multipurpose complexes, etc. Investment in megaproject is a public policy for invoking the general economy that has been applied since 1930s.The stimulant economic plans of Chinese in the years 2008-2009 and the reinvestment and improvement

rule in America in 2009 are recent example of this policy application. To orta and fin stein the term of megaproject is mostly used to refer to two major types of projects: first, projects based on huge building construction with high symbolic importance (for example, famous museums): on the other hand, large patterns with complicated components (mixed residential functions, services, industries, shared facilities, transportation facilities, etc.) (Ponzini, 2011).

Different effects of megaprojects on various aspects of society Nations will be influenced by the success or failure of even a single project in short or long term. Megaproject affects economy, policy and in this way almost all aspects of the society. The success or failure of a megaproject is closely associated with the profits and the stability of the region or even the society thus, the project can highly affect the society whether it succeeds or fails. If the economy does not work well (economic conflicts), the construction of a mega-project could prompt the development of the associated industries and raise employment. If the government is not supported by people (political conflicts), the construction of megaproject could result in peoples support. If people are bothered by nature (environmental conflicts), megaproject could save people from such a situation. Of course, it is not always the case, in most cases, megaproject could have negative outcomes. Megaprojects functions as a safety value. If the safety valve functions, the conflicts are solved and this means that the megaproject has played a positive role in society. If the mechanism of safety fails, the megaproject will not be able to reduce the conflicts. In this case, it will lead to new conflicts in society through playing negative role (Jia et al. 2011).

### **Quality of Environment**

In many theoretical contexts, numerous and different definitions of the environmental quality have been presented. However, lack of an exact and comprehensive definition of the concept of environmental quality is felt. To this relationship and overlapping, a group of research consider the concept of environmental quality in association with a more general concept of life quality and as reflection of all aspects of feeling personal welfare, considering all variables that are effect in human satisfaction. Another group of researchers consider environment quality a phenomenon with independent nature and believe that although environmental quality is achieved determined as a result of the quality of environmental components, they think it goes beyond the sum of its forming components and is indicative of a general perception of the place (Rafieyan et al., 2010). Experimental urban theorists such as Linch, opel yard, lang and Nasr consider urban environment as a phenomenon or event that is formed during the trade (transaction) between the fabric and sensible features of the environment on one hand, and patterns, cultural codes and mental abilities of the observer on the other hand. Therefore, it could be said that: the quality of urban environment as a kind of concept is achieved through representing sensible

characteristics on the side of fabric environment on one hand and being perceived, identified and assessed by observer, on the other hand, (Golkar, 2000). Van Kamp et al., (2003) considers following characteristics in defining the environmental quality due to lack of a single universal definition of it.

It is resulted from the perception of the individuals (it is an individual feeling);

Variables like socio-economic situations, gender, age, etc, affect it;

Each of the environmental dimensions have their own special qualities features;

The degree of effect of each one of the features and qualities is different in general perception of the environmental quality;

Each dimension of the environmental feature is considered as a totality so that the concept of the environment is condered as a perceived whole;

It is measurable using individual's satisfaction;

Indexes are used to assess it;

It is one of the basic factors forming the quality of life in addition to human life (Van Kamp et al., 2003);

Indexes and components affecting the quality if urban environment.

Given the fact that the concept of environmental quality is multi-dimensional, different theories are related with different aspects of environmental quality. Although, some individuals still believe that identifying such multi-dimensional concepts is idea impossible; it seems simple from outside, but, in fact, it is complicated since it has different layers like onion. If the layers are separated from each other. Only the shell remains and the main form will disappear and if each layer is studied separately, the totality is lost. Accordingly, first, the indexes and components mentioned by the different experts and scholars are studied in this section and in the next section the method of their relationships and combination will be studied.(hajinejad et al., 2011)

Queen Linch, the famous American urbanist, in the book entitled, the theory of city shape, states the features of good city shape as follows: A city that:

Be lively (stable, safe and coordinate);

Be meaningful (recognizable, organized, compatible, transparent, legible, comprehensible and important) ;

Be fit (close conformation of shape and behavior that is stable, tedious and reversible;

Be accessible (varied, fair and manageable at local level);

Be well-supervised (compatible, safe, accountant and alternatively soft and free);

In completing above features, he adds two general criteria of efficiency and justice to above- mentioned ones (Linch, 2008).

In somewhere else, Linch (2008) refers to local participation and control, self-sufficiency, social stability and spaces that facilitate informal social relationships. He adds that these may be the main (basic) values though, other factors like equality and justice, health, cleanliness, balance, discipline, close relationship with nature, relationship performance efficiency

and good access have also been emphasized.

Criteria that have been mentioned by PPS institute for the purpose of improving the quality of urban environments are as follows:

Commutability and growing social contacts; that includes components such as extending sociability, raising cultural interactions protecting and exchanging information, knowledge and values and reducing class differences.

Promoting and protecting (supporting) social identify; that consists of components like extending social organizations, creating motivation toward voluntarism, maintaining social disciplines by reinforcing values, avoiding the imposing of administrative policies by municipality and relative autonomy in urban management.

Creating and supporting local economy; small scale investments, promoting the quality of accessible equipment, strengthening the local enterprises, increasing local ownership value, creating required jobs adjustment of income tax.

Paying attention to special social groups, the vulnerable sectors of society, promotion of morality through tolerance and acceptance of plurality and cultural diversity, providing the possibility of doing activities for special social group such as woman and the disabled.

Comfort and convenience, chunkiness, creating attractiveness, increasing sense of belonging, increasing security, strengthening sense of freedom.

Extending appropriate access, creating walking paths, security for vehicles (Khodae & purkheezi, 2009).

Need to security in local society, is raised (considered) proportionate to the second need in Maslow pyramid. In stable local development, security is a basic need. Social security means that each person feels comfort and convenience in his or her life environment and local society and live his / her life calmly and without concern (Me`mar, 2011).

### Operational Model of Investigation

Effective indexes on the quality of environment considering the features and the potential effects of mega- project extracted from related theoretical literature are presented in Table 1.

Effective indexes on environment on quality have been extracted considering the properties and potential effects of mega- project resulted from related theoretical literature which have been shown in table 1.

## RESULTS AND DISCUSSION

### Introducing the Scope of the Study

As it is seen in Fig. 1, Velayat park is located in district 19 of Tehran municipality. District 19 of Tehran municipality with an area of 8919 square kilometers is located in the south east of Tehran that is limited to Ayatollah Saeedi mai road to the west, Javaneh main road to the north, Azadegan main road to the south and Navab main road, Bahmanyar street to the east. This district enjoys an old texture and consists of numerous neighbor hoods, the most important of which include;

Table 1: operation model of the study

Criterion	Index	Component
Fabric satisfaction	Accessibility	Local intra-context traffic walking accessibility
	welfare	Public transportation parking
		Required local services
Social satisfaction	Construction	Amount of construction type of construction
	Security	Rate of crime thugs
	Comfort	Annoying bustle
	Social justice	Awareness and information participation
	Vitality	Social interactions special events and activities time diversity of space use diversity of users
Economic satisfaction	Sense of belonging	Tendency toward silence
	life expenditure	Housing rent
	Efficiency	-Tendency to investment around the project - Rate of employment of the residents thanks to the project - Supporting local economy
	Justice	Equal economic chances
Environment satisfaction	Pollution	Air pollution
		Noise pollution
	cleanliness	Environment cleanliness building debris

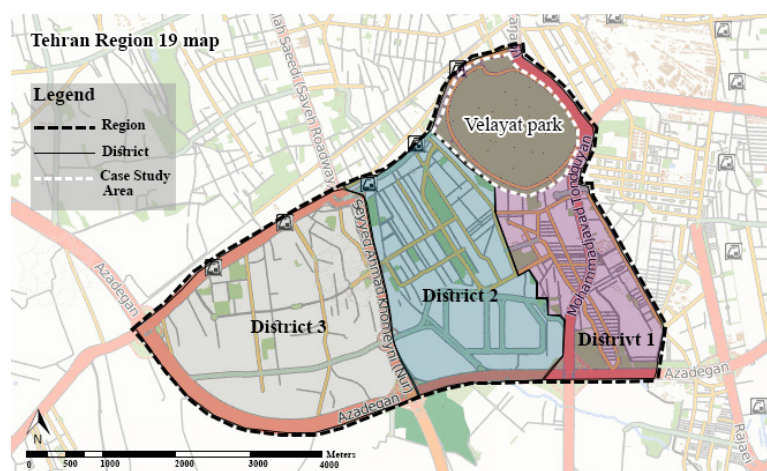


Fig.1: position of Velayat park in region 19 of Tehran Municipality. (Tehran municipality)

Khaniabad now, Shariati town, Abdulabad, Ne'matabad, Saleh Abad, Dowlatkhah, Ahmadih town, Bukharaee town and the outstanding places of the district consist of Velayat park, Brick-making furnaces, fruit and vegetable central square of Tehran and Auto sales center. This district is adjacent to districts 16, 17, 18 and 20 and consists of 5 areas and 12 neighborhoods. (Statistical Center of Iran, 2013)

### Research Method

In this study, the effective indicators on the quality of environment caused by administering megaprojects (Velayat park) were determined by reviewing the theoretical literature and documentary studies associated with the topic of the investigation. The degree of effectiveness of study indexes on the quality of the surroundings was assessed through interview with residents and questionnaire. Then the statistical methods of Gamma test were used to analyze the results obtained from the questionnaire and to answer the hypotheses and aims of the study.

### Data Collection

Interview with residents using questionnaire was used to assess the effect of indexes related to the quality of the individuals living environment. Given the fact that the desired indexes were qualitative, Likert five option spectrum was used to assess the effect of indexes in order to qualify them. The figure (1) is indicative of the lowest rank and corresponds "very little" choice and in this way the figure (5) is indicative of the highest rank and corresponds the choice "very much".

### Sampling

The number of sample was five times more than the number of studied indexes given the selected analysis method and the figure 120 was considered. The adequacy of sampling must be ensured after extracting data from the completed questionnaires and transferring them into spss software prior to analysis.

To that end, KMO index was used. The closer the value of this index is to 1 (it ranges between 0 and 1) (the least accepted value is 0.6), the desired data are more appropriate for analysis. In this study, this index is equal to 0.745 that is indicative of the relationship between indexes and dependent variable.

- In this stage, the presence of significant relationship among the indexes of urban environment quality and the dependent variable of satisfaction of the residents is studied. In this way that given the point that both independent and dependent variables ordinal, that is the indexes of urban quality and residents, satisfaction, Gama test is used to study the presence or absence of significant relationship. In this type of test that have been presented in table (2), if the significance level is lower than 0.05, the relationship will be significant. And the closer the value of the test is to (1), the higher the intensity of the relationship will be. In this way, the more the amount of priority given to each factor, indeed the more effective its effect will be the dependent variable.

### Prioritizing Indicators

Given the point that indexes with lower effects were removed from indexes in previous stage, now the indexes have acceptable significance. In residents, point of view, each of the indexes have different effectiveness intensity and are prioritized according to results of the analyses.

### Summary of Analysis Results

As it was revealed, indexes of "special events and activities" and "diversity of users" have the highest degree of effect on the quality of the environment in residents, viewpoint. This shows that the presence of Velayat park in this area has attracted people from different age and sex group toward itself. Also, in the interviews with people, they acknowledged that Velayat park has been able to attract vulnerable groups including the seniors, women and children to this environment and special programs and activities that are held in different occasions in this park including clothing fairs, food stuff fairs and stationery fairs and also holding celebrations at Norouz, Ramadan, and fairs in religious occasions of Fetr and Sha'ban have resulted in the satisfaction residents with Velayat park. Another index, that is, crime rate, is effective in environmental quality in resident's view point. In a way that the crime rate has not been declined by constructing Velayat park in this area and it has not been able to have positive effect on reducing the rate of crime. Accordingly, it has had a negative effect on the satisfaction of residents since the residents have considered, the rate of crime as the index of efficiency [effectiveness] and since the construction of Velayat park has not been able to meet this aim, it has led to a decline in the satisfaction of residents. The next indexes are "the employment rate of residents" and "supporting local economy" that are of high priority. In residents, opinion, these two indexes could have high effects on environmental quality. But at present no considerable or positive changes have been made in the rate of employment or in local economy of the local residents due to constructing Velayat park, while the residents have expected an improvement in the employment rate of local residents and supporting local economy. "local within context traffic" and "annoying bustle" are other indexes that have had much effect on the quality of the environment. While a slow-speed ring has been considered for access to the park, the residents have been dissatisfied with the traffic caused by the park and the annoying bustle due to using the space. It seems that this dissatisfaction applies mostly to the entrance of the park. Since two main entrance play the main role in accessing and departing the park, this congestion and bustle in these two areas near the immediate residential area has led to dissatisfaction. Indexes that were mentioned were among the highly effective ones on environmental quality that were assessed or measured in viewpoint of the residents. The next indexes consisting of "environmental cleanliness", "time diversity in the use of space", "awareness and information", "participation", "social interactions", "equal economic opportunity", "public transportation", "pedestrian access",

Table 2: Assessment of the relationship between the quality of urban environment and residents, satisfaction.

Environment quality measurement a city from the residents viewpoint	critierion	index	Type of test	Significance level	Test result		Test value
					H <sub>1</sub>	H <sub>0</sub>	
Fabric satisfaction		Local intra-fabric traffic	Gamma	0.000	*		0.812
		Pedestrian access	Gamma	0.000	*		0.456
		Public transportation	Gamma	0.000	*		0.466
		Parking	Gamma	0.005	*		0.341
		Local services	Gamma	0.000	*		0.853
Social satisfaction		The amount of construction	Gamma	0.005	*		0.352
		Type of construction	Gamma	0.31		*	0.267
		Crime rate	Gamma	0.000	*		0.976
		Thugs	Gamma	0.000	*		0.810
		Annoying bustle	Gamma	0.000	*		0.706
		Awareness and information	Gamma	0.000	*		0.564
		Participation	Gamma	0.000	*		0.542
		Social interactions	Gamma	0.000	*		0.536
		Special events	Gamma	0.000	*		0.991
		Time variety in space use	Gamma	0.000	*		0.642
Economic satisfaction		User's variety	Gamma	0.000	*		0.991
		Tendency to habitation	Gamma	0.114		*	0.193
		Cost of housing	Gamma	0.005	*		0.366
		Willingness to invest	Gamma	0.149		*	0.181
		Employment rate of residents	Gamma	0.000	*		0.921
		Supporting the local economy	Gamma	0.000	*		0.853
Environmental satisfaction		Equal economic opportunity	Gamma	0.000	*		0.511
		Air pollution	Gamma	0.306		*	0.128
		Noise pollution	Gamma	0.000	*		0.664
		Environmental cleanliness	Gamma	0.000	*		0.688
	Debris	Gamma	0.305		*	0.126	

Explanations:

Significance level smaller than 0.05 is 95% significance.

Significance level smaller than 0.1 is 90% significance.

H<sub>0</sub> means the rejection of H<sub>0</sub> and H<sub>1</sub> means the acceptance of H<sub>0</sub>.

Table 3: Prioritizing the indexes of measuring urban environmental quality in resident's viewpoint.

Index	Test value	priority
Traffic within the local context	0.812	7
Pedestrian access	0.465	18
Public transportation	0.466	17
Parking	0.341	20
Local service	0.853	6
Amount of construction	0.352	19
Crime rate	0.976	3
Thugs	0.810	8
Annoying bustle	0.706	9
Awareness and information	0.564	13
Participation	0.542	14
Social events	0.536	15
Special events	0.991	1
Time diversity in space use	0.642	12
Users diversity	0.991	2
Cost of housing	0.336	20
Employment of residents	0.921	4
Supporting local economy	0.853	5
Equal economic opportunity	0.511	16
Noise pollution	0.664	11
Environmental cleanliness	0.688	10

and the amount of construction, have very high effectiveness (rate) or intensity that are studied in the next state.

## CONCLUSION

According to what was said, paying attention to the amount of satisfaction of residents with their residential environment quality especially in urban contexts encountering problems and difficulties could have all-sided effect on the life of citizens and must be considered in city planning and is considered one of the most important aspects of life. Thus, in present study, a questionnaire was compiled according to the analytical model to measure environmental quality an explain the concept and effective components of that were mentioned in the theoretical foundations of the research. The questionnaire was compiled and was attributed among the residents of the Velayat park surroundings. Questionnaire items were compiled based on four criteria of (satisfaction with fabric quality, satisfaction with social quality, satisfaction with economic quality and satisfaction with environmental quality and also its indexes

and components were compiled and the resident's satisfaction was assessed. In the end, the effective indexes on the quality of environment were assessed from the resident's viewpoint and were prioritized according to their importance and their intensity of effectiveness results of this study indicate that the indexes of " special events and activities" and " diversity of users ", have the highest positive effect on the environmental quality. It could be said from the resident's viewpoint the social components are of higher priority in satisfaction with the project of Velayat park. Also, the indexes of " the rate of economy " that have had the highest negative effect, is indicative of the fact that the economic components also have much importance in from residents, viewpoint and they expect to meet their economic expectations by such projects. Therefore, this kind of assessment and comprehensive and complete attention to all influential components could be beneficial for improving the quality of urban environment surroundings and in planning and compiling strategic for more development of this project.

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