Mixed Land Use Utility Assessment in Tehran's Bryanak Neighborhood R.

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Abstract

In land use and transportation planning, mixed land uses usually are those various and consistent land uses which have been within a single structure or close to each other. Mixed land uses in different societies are used for different purposes. In some of these societies, mixed land uses are appropriate strategies in mixing the housing types in a small scale in order to enhance the identity of old cities. In other societies they are used as a mean to revive the worn out areas and speed up economic developments. Even some societies use them to create the suburbs' centers. In this regard, the aim of this study is to evaluate the mixed land uses in Tehran's Bryanak neighborhood. For this purpose, the most important criteria and sub-criteria are compiled to determine the situation of the mixing land uses in this neighborhood, and by using Analytical Hierarchy Process (AHP) and questionnaire an appropriate and measurable framework is provided to measure and present strategies for the preservation and promotion of mixed land uses. The results indicate that the final score of this neighborhood was calculated as 3.08 that is very close to the "average" and indicates that the situation of mixed land uses in Bryanak neighborhood is average and some actions should be taken to improve conditions for the development of mixed land uses in this neighborhood.

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Introduction

Cities in Iran, due to the influence of modernization and changes in the social and political environment, have experienced a structural disjunction in the continuity of its own indigenous and traditional urban pattern. Modernization, which was accelerated in the mid-twentieth century, caused some basic changes in the physical and socio-economic environment of cities. Iranian cities, which before modern period had a structure that could deal with the most daily needs of their residents, in recent decades and due to the modernization process which was used by the government along with zoning policy made the residents meet their needs over a long haul. The necessity of mixed use development principles in Iranian cities in order to restore the traditional urban pattern and promote the social interactions, encouraged the authors to evaluate the criteria for mixed use development in Iran's different neighborhoods.

For this purpose, Tehran's bryank neighborhood was chosen. In this neighborhood a Holy Shrine has a religious and social function and is used by most residents specially women and children as a place for social interactions. Despite its being located in an old district and suffering many physical and economic problems, about 10 percent of the neighborhood's space is devoted to parks and other public places such as the holy shrine which has encouraged the residents to use the neighborhood to deal with their material and social needs. Also, people's presence in the streets and other public places at the most hours of the day strengthens the sense of social solidarity and enhances the sense of belonging among the residents. The purpose of this study has been to codify development criteria for a desirable mixed use and then evaluate these criteria in Tehran's Bryank neighborhood in order to determine which of the criteria in the neighborhood have a desirable condition and which one has an undesirable condition.

Poor urban conditions such as "congestion" and "pollution", Grant (2002) suggests, at the very beginning of the 20th century have led to modern town planning. In 1920s, zoning policy was established as a strategy to separate the uses which were supposed to be incompatible. In the most years of the century, however, many planners in urban regions tried to separate land uses. By the 1980s, mixing uses were increasingly supported in the literature and became a popular subject to be discussed in many conferences (see,e.g., Van der Ryn & Calthorpe, 1986). In recent years, new urbanism, as a very important movement has strongly influenced the establishment of mixed land use in North America planning. New urbanism which has its roots in Andres Duany and Elizabeth Plater-Zyberk's theory of the neo-traditional town planning (Katz, 1994; Krieger, 1991) and is influenced by "the transit- oriented development concepts" of Peter Calthorpe (1993), has become "veritable gospel in the 1990s" (Grant, 2002). Grant then argues that "mixed use regained favor with its promise of restoring vitality, environmental quality, equity, and efficiency to the postindustrial city" (2002), and that many benefits are suggested by the proponents of the mixed land use. Similarly, Rowley suggests that "mixed land use and development is being officially promoted as essential to the creation and maintenance of attractive, livable and sustainable urban environment" (1996). Although, the functional, social, and ecological benefits of mixed use are strongly supported by contemporary planning theory, few researches have evaluated the benefits of the mixed use principles in practice (SGN, 2007).

For mixed use development, several definitions have been suggested in various books and articles. Some of these definitions are as follow:

•A development in which different uses of the land such as commercial, retail and residential are clustered together in order to increase mobility of pedestrians and reduce the need to travel by car (Seifoddiny, 2010).

•A mix of complementary uses within a building, place or specific area. Horizontal mixed uses usually are located in different buildings and close to each other and vertical mixed uses are performed on different floors of a building. Such places are used by different people with different goals during all hours

of the day. Therefore, these places are unpredictable and no uniformity is found in them (Cowan, 2005).

The most important and tangible impact of the mixed uses is that they generate variety and improve environment's quality. Jacobs (1962) believes that healthy and lively cities are organic, spontaneous and fortunate. Such cities boast dense population, mixed uses and economic, human and architecture diversity. Generating diversity in cities is based on this fact that in cities different people with diverse tastes, skills and needs live together. If the distribution of uses along a street makes different clients' needs and tastes spread during the day, different services as well as unique and specialized urban shops will be generated spontaneously (Jacobs, 1962). Variety made by different uses also will help to create a safe environment. The absence of people in an urban environment, at the most optimistic case might make the atmosphere seem dreary and slack and in a worst case scenario there will be threat and fear of wandering and loneliness. Violence, fear, rape and other crimes, in every corner of the deserted streets and in empty buses and trains may be lurking (Tibbalds, 2006). Kelvin Campbell, as an urban designer, enumerates 10 characteristics which can help create conditions for development of mixed uses:

1.A suitable foundation for mixed use

2.Variety in ownership

3.Proper maintenance and policies

4.A precise planning for this process over the time

5.The price of the land which should not be too expensive

6.The location of the place which had better be located in the busy parts of the streets

7.Appropriate overcrowding

8.Flexible forms of building

9.Relationship between two sorts of buildings and two sorts of activities

10.Positive attitude toward life (Cowan, 2005).

The most important design elements required for any kind of mixed use development, according to the opinions of different scholars and successful implemented projects, are as follow:

1.Streets are located in an interconnected network. Therefore, there are several separate paths for different destinations (American Planning Association, 2006; Overland Park Council, 2009; City of Orlando, 1999).

2.Parking and garages' spaces are rarely in the front of the streets and parking along the streets seldom occurs (Overland Park Council, 2009; Jacobs, 1962).

3.Every mixed use development possesses public places and encourages interaction between residents (Rowley, 1996; Jacobs, 1962; Gehl, 1987; Freestone, 2008; Overland Park Council, 2009; ICMA, 2002; Grant, 2002; SGN, 2002; American Planning Association, 2006).

4.Every mixed use development includes a variety of housing types and activities (Overland Park Council, 2009; Rowley, 1996; Jacobs, 1962).

5.Mixed development makes people be attracted by the street (Overland Park Council, 2009; SGN, 2002; City of Boulder, 2007; American Planning Association, 2006).

6.Good foundation for mixed uses can help create conditions for the development of mixed uses (Campbell, 1999).

7.Variety made by mixed uses helps to establish security in the environment (Tibbalds, 2006; Rowley, 1996; Jacobs, 1962; SGN, 2002).

Finally, based on the benefits and advantages of mixed development and successful international experiences in this field, criteria and sub-criteria for a desirable mixed use development will be determined which are shown in the table below:

In the following these criteria and sub-criteria will be evaluated in Tehran' Bryanak neighborhood and their desirability will be determined.

Materials and Methods

Bryanak neighborhood, with 250712 square meters, is an old neighborhood in Tehran, located in District

Criterion	Sub-criterion
Security and Peace	
	Group supervision
	Territoriality and sense of belonging
	Access control
	Positive attitude to life
	Support of legal activities in public places
Pedestrian convenient access	Pedestrian access to the main streets
	Pedestrian facilities
	Interesting activities for pedestrians
	Limiting uses related to the cars
Relationship between the neighborhood and the street	Neighborhood's connection to the network Main streets
	Connection between services and residential uses
Public spaces	Public spaces should be existed
	The establishment of some activities in urban open spaces
	Mixed uses connection with public places
Appropriate foundation	Appropriate land prices
	Good congestion
	Being located in crowded places
Reorganization of the traffic	Reducing street parking
	Parking management tools
	No unnecessary parking garage
Variety and form	
	Annexing compatible industrial uses with urban environment
	Housing variety
	Variety in micro uses
	Vitality of the uses at all hours of the day and night
	Mixing uses in one building

Table 1: Criteria and sub-criteria for a desirable mixed use in the neighborhood. Source: authors

10 of the City. It has been formed based on the development of Bryanak village in the southwest of Tehran over the last 100 years. The main urban edges which distinguish this area from the other neighborhoods in zone ten are: Navab highway in east, Qazvin road in south and Davati Street in west. Komeil Street in the north part of this zone is supposed to be the most important urban edge in this area. In fact, this area based on its strong urban edges of Navab highway in east and Qazvin road in south, as a residential place is almost highly isolated and separated from other neighborhoods; however, these edges as important and rapid urban paths have an important function to connect this area to work and service centers in northern part of Tehran (M. M, design and architecture, 2007).
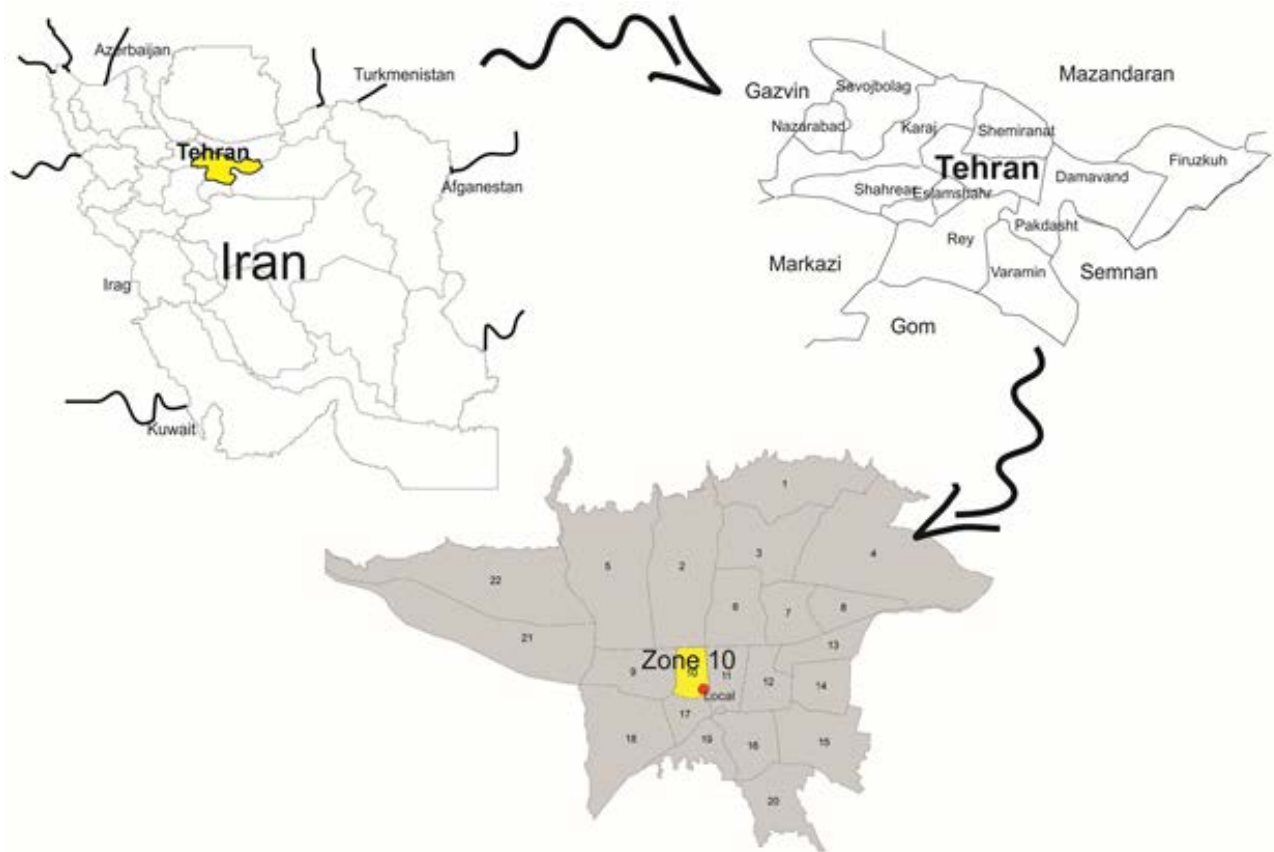
Map 1: the location of the area

In this study, by using analytical hierarchy process (AHP), the weight of criteria and sub-criteria related to mixed use development was measured. Then a questionnaire was used to collect Bryanak residents' opinion about the sub-criteria and the status of each of the criteria in neighborhood was specified and finally the general situation of the neighborhood in relation to mixed use development was evaluated. AHP is a flexible, robust and simple technique that is used for decision making in a condition in which conflicting decision criteria make it difficult to choose between the options. This multi-criteria evaluation method was first proposed by Thomas L.

Saaty in 1980 and till now has had various applications in different sciences (Saaty, 1980). Using this method, current study is going to evaluate desirability of mixed uses in Tehran's Bryanak neighborhood based on seven criteria and twenty eight sub-criteria which are given in table 2. For this purpose, binary comparison matrices of criteria and sub-criteria for each subject were made by using the opinions of several urbanism professors of Tehran University, Science and Technology and Alammeh Universities as well as Islamic Azad University branch of Science and Research. Then, using Expert Choice software the weight of each matrix was analyzed. The results are given in table below: Then in order to determine

Sub-criterion	Weigh	rank	Score in the neighborhood	Situation in the neighborhood
Supporting legal activities in public spaces	0.115	1	2.48	Relatively low
Positive attitude to life	0.098	2	3.70	Relatively high

Pedestrian facilities	0.097	3	2.39	Relatively low
Territoriality and sense of belonging	0.091	4	3.29	Relatively high
Interesting activities for pedestrians	0.067	5	3.26	Relatively high
Pedestrian access to the main streets	0.059	6	3.80	high
Area's connection to the network of main streets	0.041	7	3.24	Relatively high
Public spaces	0.038	8	3.80	high
Being located in crowded places	0.037	9	3.85	high
Limiting uses that are related to the cars	0.034	10	2.07	low
Parking management tools	0.033	11	1.95	low
Group supervision	0.030	12	3.26	Relatively high
Vitality of the uses at all hours of the day and night	0.029	13	3.53	high
Access control	0.027	14	2.53	low
Appropriate land prices	0.027	15	3.19	Relatively high
Reducing street parking	0.026	16	2.31	Relatively low
Connection between services and residential uses	0.025	17	4.21	Very high
Good congestion	0.025	18	3.43	Relatively high
Mixed uses on surface	0.024	19	3.21	Relatively high
Mixing uses in one building	0.015	20	2.29	Relatively low
Mixed uses connection with public places	0.015	21	3.39	Relatively high
The establishment of some activities in urban open spaces	0.015	22	3.19	Relatively high
Annexing compatible industrial uses with urban environment	0.010	23	3.31	Relatively high
Housing variety	0.008	24	2.85	Relatively low
No unnecessary parking garage	0.008	25	1.78	Very low
Variety in micro uses	0.007	26	2.78	Relatively low

Table 3: the results of the experts and residents' opinions on the sub-criteria. Source: authors

the score and the position of mixed use by considering all the sub-criteria, each sub-criterion's weight multiplied by its final obtained score; then this sum is done for all the sub-criteria so that the neighborhood's final score, in relation to desirability of mixed uses, can be obtained. The final score of the neighborhood was calculated as 3.08 which was very close to the option "average". It indicates that the condition of mixed uses in Bryanak neighborhood is generally average and that some activities should be taken to improve condition for mixed use development in this area.

Conclusions

Sub-criteria such as "Public spaces" due to the existence of holy shrine and parks and residents' widespread use of them; "Being located in crowded places" due to this area's closeness to the airport, Tehran's Grand Bazaar and railway; "Pedestrian access to the main streets" because of the narrow streets and the low speed of the motor vehicles which enhances the pedestrians' being in the streets; "vitality of the uses at all hours of the day and night" due to the presence of the residents in the parks and holy shrine at most hours of the day and night, and "connection between services and residential uses" due to the existence of different shops and service institutions, have a very good condition in the neighborhood.

Some other sub-criteria, such as "limiting uses related to the cars", due to the lack of effective actions in limiting the uses which bring cars into the neighborhood; "parking management tools" due to the lack of sufficient multi-storey car parking which increase street parking, and "access control" because of the narrow streets and problems related to the alleys and sideways, have undesirable (low) situations. The undesirability of these three sub-criteria is the main cause of discontent among the residents in many traditional neighborhoods of Tehran. Therefore, in order to solve this problem, building multi-storey car parking and reconstruction of the worn out parts of the city have to be put on the agenda.

Generally, five sub-criteria's situation is either "high" or "very high", three sub-criteria have "low" situation and others' desirability is either "relatively high" or "relatively low".

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