Occupant Views on Environmental Effects of Trabzon Square Urban Transformation Project

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ABSTRACT
In the present study, the occupancy of the square, located in Trabzon urban center, Turkey and originally christened as Atatürk Square but called "the square" or "the square park" by local residents, serving both as a square and a park and renovated with an urban transformation project, was discussed. A survey was conducted with 123 individuals to determine how the occupants perceived the environmental properties of the renovated square park after the urban transformation project. In the survey, their visit frequency, the time they spent in the park, the activities they preferred to conduct in the park, the environmental features they liked in the park, and their satisfaction with the facilities offered in the park were questioned. The study findings demonstrated that the occupancy duration and frequency were high, the park was predominantly used for resting activity, it provided a variety of activity facilities, mostly sitting furniture were preferred among environmental properties, occupant satisfaction was high and satisfaction was affected by the diversity of available activities the most. The study findings also revealed that the Trabzon Square urban transformation provided a more habitable space for the citizens.

KEYWORDS: Urban Transformation, Environmental Impact, Square, Post-Occupancy Evaluation

1. INTRODUCTION

Cities, similar to living beings, are social units that are born, grow and get old. Cities mold the relationships among individuals, in other words, the social life. It is desirable to renew dated urban areas to improve their social and economic attributes. It is important to determine the purpose and method of this renewal accurately. Spatial urban structure is formed by unique processes and social dynamics. Urban transformations conducted in different countries involve interactions between different variables. Thus, transformation in Turkish metropolitan cities is implemented as a result of interactions between contextual, socio-economic, administrative and physical variables. In its broadest definition, urban renewal refers to the revitalization and reintegration of urban areas that are old, abandoned, depreciated and obsolete due to different factors determined by the socio-economic and physical conditions of the era (Alkışer, 2009; Low et al., 2005; Lownsbrough and Beunderman, 2007; Ozden, 2000; Yigitcanlar, 2001; Young, 2008).

Social change occurs in the structure and culture of a society. It is inevitable for individuals who migrate to the city to experience a cultural change along with the environmental change they experience. However, not every social change corresponds to development. Because, social change could be backwards. Social mobility increases in every society where social change is experienced. These urban changes and transformation processes lead to serious social and economic problems. Thus, both space and society have mutual transformative effects. Spatial change and transformation directly affect the society. Urban reformation and assigning a new meaning to the living space became an increasingly adopted approach today. This relationship between individuals and urban space transforms the entire city over time (Kocak and Tolanlar, 2008; Tipple, 2000; Rapaport, 2004; Danacı and Atik, 2013; Juan, 2010).

This urban change and transformation process do not always occur in the desired and planned direction. Urban besiege by unsound environment is the most important and clear indication of unhealthy transformation that includes traffic problems, noise, gradually decreasing green spaces. As the city is an inherently changing and transforming system, it follows a program that allows urban regeneration. One of the most important tools that could change the transformation of a section or the whole city in the desired direction is urban transformation projects (Atkinson, 2004; Balamir, 2004; Göksu, 2003; Mc Cormick et al., 2003; Oztaysi et al., 2016).

"Sustainable", "people-oriented", "participatory" urban transformation projects are important for occupant satisfaction and development of long-lasting and successful spaces (Noon et al., 2000; Thomas, 2003; Huston et al., 2015, Güneroğlu and Bekar, Long, 2005; Wang, 2016). The process of spatial transformation should be based on the development of main criteria with the local community/residents and no stakeholders should be excluded; a participatory process should be conducted. Thus, an urban square, where an urban transformation project was conducted, was analyzed based on occupant views. The study also scrutinized whether the urban transformation project was participatory.

Urbanites perceive the urban spaces they occupy not only based on their structural features, but also as a body of mental structures and processes produced by the utilization of that space. Thus, when there is a harmony between the mental structure and processes and the built space, perceptibility improves and "alienation" is observed when there is no harmony (Schulz, 1971). Therefore, cultural activities (the activity of creating human products) are very important in the perception of urban space by the urban residents since it is expected to lead to spatial differentiation. However, the rate of change (communications, media, globalization, etc.) that is observed due to the technological dependence of developing countries on the developed nations leads to the emergence of identical spaces (Doğan et al., 2018; Hall and Porterfield, 2001). Consequently, the harmony between the perceived space and the built space is lost, perceptibility is reduced, and the urbanites are alienated from the urban space that they occupy. Thus, urban transformation projects should create occupant- and urbanite-oriented spaces that do not lead to alienation. In urban transformation projects, data should be collected and analyzed both from traditional and changing environments. The principles and standards for future urban spaces could be determined using the mutual predictions based on these datasets. Therefore, cultural elements, their evolution and transformation should be taken into account in urban design (Gür, 1996).

In this context, the occupancy of the square, located in Trabzon urban center, Turkey and originally christened as Atatürk Square but called "the square" or "the square park" by local residents, serving both as a square and a park and renovated with an urban transformation project, was discussed in the present study.

2. MATERIAL VE METHOD

2.1. Study Area

The city of Trabzon, which was founded at least 4000 years ago, is one of the rare cities that attracted global attention in all historical eras. Its natural heritage, cultural structure and several symbolic features have led to a unique urban identity. Due to its geographical significance and its location at a crossroads, Trabzon has hosted several civilizations throughout its history. The city of Trabzon was first established within city walls, and then spread out and its urban texture has expanded. Thus, the Square Park (in Atatürk Square) was limited by the dense urban architectural texture. Trabzon Square Park is located in Trabzon urban center between Gazipaşa and Taksim inclines. Square Park is utilized for public ceremonies and recreational and entertainment purposes by the citizens (Işık et al., 2016; Bayramoğlu and Yurdakul, 2019). The park, which was once the last stop for municipal buses and minibuses, was transformed into a symbolic park that witnessed historical processes after the square was closed to vehicle traffic, where

commercial and service activities could be conducted (Figure 1). Meydan Park (Atatürk Square) was redesigned and constructed within the scope of Urban Transformation Project implemented by Trabzon Municipality (Decision date: 07.05.2010 and no: 173) (Sancar and Acar, 2016). Trabzon Square Park is a settlement center due to its historical structure and ease of access. In the vicinity, there are indoors parking and dining facilities, shopping centers, and banks, offices, and hotels, and the park is the focal point for the entire city. The study area is in the heart of the city and used by both local and out-of-town users of all ages in all seasons. The Square Park includes a statue of Ataturk, ceremonial space, ornamental pools, food and beverage facilities, sitting and lying spaces, and shade elements.

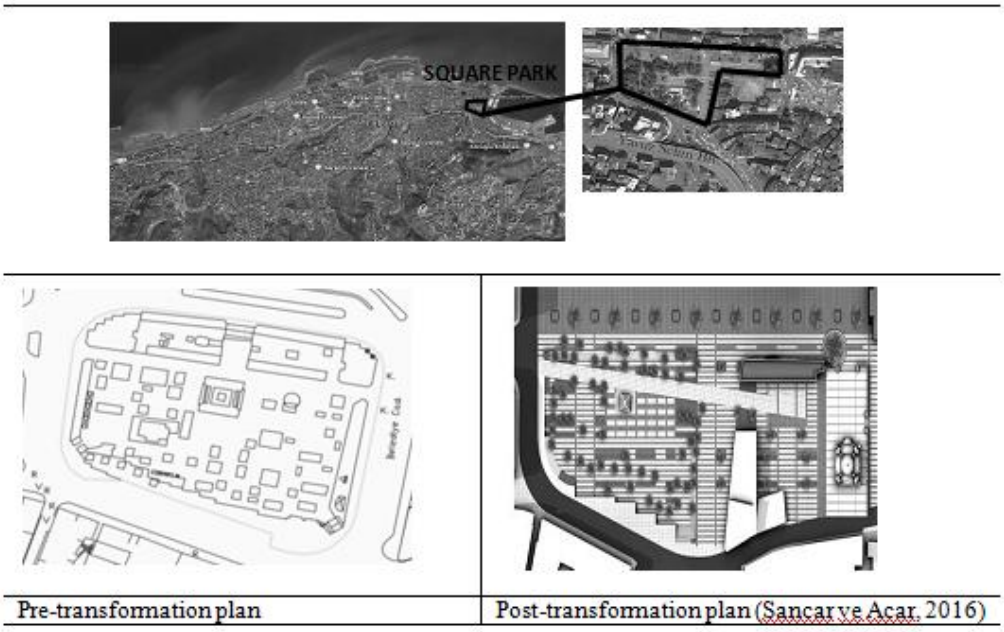

Figure 1. Study Area

2.2. Method

The present study was conducted with the field study approach. The said research approach, which aims to analyze the designed environment, is described as Post Occupancy Evaluation, (POE) (Zimring, 1987). Post-occupancy evaluation was initially developed by the disciplines that analyzed human behavior and the environment in the 1960s (Betchel, 1997; Betchel and Churchman 2002). Post-occupancy evaluation includes the analysis of a designed and constructed space after a certain time of occupancy. Post-occupancy evaluation focuses on the occupants and their needs in a space (Preiser et al., 1988). In other words, it is an analysis method where the occupant satisfaction and dissatisfaction about a physical environment is investigated (Marans and Cooper, 2000). Thus, the extent that the project, which was designed to meet the needs and requirements of the occupants, fulfilled these needs after the implementation and whether the project was participatory are investigated. Thus, the present study aimed to conduct a post-occupancy evaluation on the renewed square after the urban transformation project.

In the study, a survey was conducted with 123 individuals to determine the perceptions of occupants on the environmental attributes of the renewed Square Park after the urban transformation project. The survey included the following questions:

- The frequency of their visits to the park (everyday, a few times weekly, a few times monthly, a few times annually, less than a few times annually).
- The time they spent in the park (less than half an hour, half an hour, 1-2 hours, 2-3 hours, more than 3 hours).

- Preferred activities in the park (sitting, resting, chatting, playing, eating drinking, taking their grandchildren for a stroll, allowing their children to play, listening to music, observation, watching performances, participating in ceremonies).
- The environmental attributes that the occupants like (water elements, plants, furniture, statues, lighting, shade elements).
- Occupant satisfaction with park facilities (5-point Likert scale; 5 = very satisfied, 1 = not satisfied).

3. FINDINGS AND DISCUSSION

3.1. Demographics

The survey was conducted with 123 occupants (62 male and 61 female occupants) in the Square Park. The majority of the participants were over the age of 50 (44 individuals) (Table 4).

Table 1. Survey participant demographics

Demographics N=123			%
Gender	Male	62	50,4
	Female	61	49,6
Age	18-29	23	18,7
	30-39	31	25,2
	40-49	25	20,3
	50 and over	44	35,8
Education	Primary school	7	5,7
	Middle school	29	23,6
	High school	44	35,8
	College	39	31,7
	Graduate	4	3,2
Profession	Public servant	33	26,8
	Retired	24	19,5
	Self-employed	14	11,4
	Worker	10	8,1
	Housemaker	26	21,2
	Student	15	12,2
	Unemployed	1	0,8
	Other	-	-

3.2. Occupancy frequency and duration findings

Frequencies and percentages were used to determine how often the occupants used the Square Park (Table 2). Occupants reported that they mainly utilized the park several times a week (35%) and every day (34.1%).

Table 2. Occupancy frequency

Occupancy (N=123)	Frequency	Percentage	Cumulative Percentage
Less than a few times annually	3	2,4	2,4
A few times annually	5	4,1	6,5
A few times in a month	30	24,4	30,9
A few times in a week	43	35,0	65,9
Everyday	42	34,1	100,0
Total	123	100,0	

Based on the above-mentioned findings, the occupancy frequency of the park after urban transformation was high with a mean occupancy frequency of 3.94. This area, which has not lost its urban focus attribute, has significant contributions to a higher occupancy and socio-cultural human interactions with its new design.

Frequencies and percentages were used to determine how long the occupants used the Square Park. The occupants reported that they mainly used the park for 2-3 hours (35%) and longer than 3 hours (27.6%) (Table 3). Based on this finding, the occupancy frequency of the park after urban transformation was high with a mean occupancy duration of 3.74.

Table 3. Occupancy duration frequency

Occupancy duration (N=123)	Frequency	Percentage	Cumulative Percentage
Less than half an hour	5	4,1	4,1
Half an hour	10	8,1	12,2
1-2 hours	31	25,2	37,4
2-3 hours	43	35,0	72,4
More than 3 hours	34	27,6	100,0
Total	123	100,0	

Since the occupancy frequency and period of a space is an indicator of the success of that space, these variables were investigated. Amerigo and Aragones (1997) reported that the occupants utilized the spaces that they were satisfied with for a long time and they did not use the spaces that they were not satisfied with. Similarly, the studies conducted by Canter and Rees (1982) supported the above-mentioned findings. The present study occupancy findings demonstrated that the urban transformation conducted in the Square Park was successful (Figure 2).

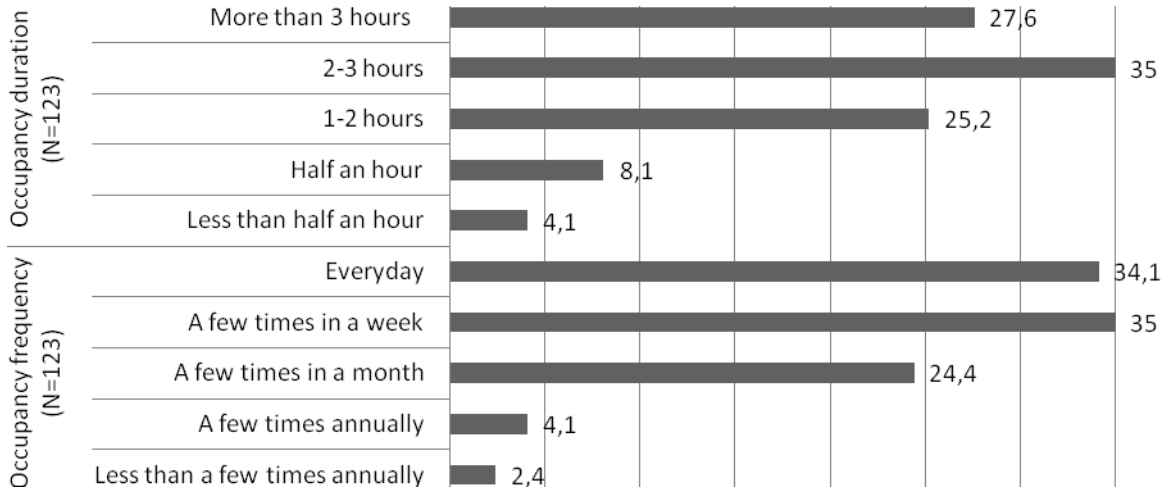

Figure 2. Square Park occupancy statistics

3.2.1. Findings on activity type

In order to determine the types of activities the Square Park occupants conducted more, they were asked "Which activity do you conduct in this area the most?" Thus, the activities conducted by the occupants in the park and the frequencies of these activities were determined. The χ2 test demonstrated that the distribution was significant (χ2 = 95,293[a], df9, p <0.01). Park occupants stated that they mostly visited the park for resting (29.3%) and sitting (24.4%) activities. The frequencies and percentages of the activities conducted in the Square Park are presented in Table 4.

Table 4. Activities conducted in the Square Park

Activity type	Frequency	Percentage	Cumulative Percentage
Sitting	30	24,4	24,4
Resting	36	29,3	53,7
Chatting	13	10,6	64,2
Playing	4	3,3	67,5

Eating drinking	5	4,1	71,5
Taking grandchildren for a stroll	5	4,1	75,6
Allowing children to play	7	5,7	81,3
Listening to music	4	3,3	84,6
Observation	3	2,4	87,0
Watching a performance	6	4,9	91,9
Participating in ceremonies	10	8,1	100,0
Total	123	100,0	

Environmental researchers utilized the on-site observation technique, one-on-one interviews and surveys to draw detailed images of park activities (Cooper Marcus and Wischemann, 1987; Linday; 1977, Taylor; 1978; Gold; 1980; Rutledge; 1981; Cooper Marcus and Francis, 1998; Özdemir Işık et al., 2016). Different activities and forms provide a rich conceptual mixture in spaces where individuals meet (Düzenli et al., 2012; Alpak et al., 2018). Gehl (1987) reported that only mandatory activities occur when the physical attributes of activity areas in open spaces are inadequate, and elective activities are conducted when physical attributes of outdoor activity spaces are adequate. Today, the number of successful urban open spaces with high level of occupancy and offer a variety of activities are quite few. Different users interpret a space in different perspectives, assign different meanings to that space and conduct different activities (Bentley et al., 1993). The present study findings demonstrated that 11 different types of activities were conducted in the park and the transformation project was successful and it allowed the occupants to conduct various activities.

3.2.2. Findings on environmental attributes

Frequency distributions and percentages were calculated to determine the environmental attributes preferred by the occupants in Square Park (Table 5). The occupants stated that they liked the sitting furniture (43.1%) and plants (17.1%) in the park the most.

Table 5. Occupant preferences about environmental attributes in Square Park

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Water elements	10	8,1	8,1	8,1
Plants	21	17,1	17,1	25,2
Furniture	53	43,1	43,1	68,3
Statues	11	8,9	8,9	77,2
Lighting	18	14,6	14,6	91,9
Shade elements	10	8,1	8,1	100,0
Total	123	100,0	100,0	

The dimensions, material used and design of the seating elements directly affect the physical comfort of the occupants (Alpak et al., 2019; Mumcu et al., 2010, Düzenli et al., 2019). The mobile furniture used in squares is an alternative to benches and other seating elements used in the parks (Yücel, 2006). All furniture in Square Park are immobile furniture and all furniture types available in the area are indicated. All furniture surfaces are produced with wooden material. Five wooden furniture elements were designed and implemented after the project in the study area. These furniture included low seating units, 1-meter seating units, 2-meter seating units, 3-meter seating units, wooden seating units with an activity platform. The spatial furniture were constructed with impregnated 1st class wood on a stainless steel structure. The corners were rounded to prevent physical discomfort. Even though the furniture are mostly utilized for sitting and resting activities, they also facilitated social activities such as chatting and socialization. Thus, occupant preference levels were high.

Previous studies on environmental experiences identified several physical attributes that lead to appreciation, preference and that affect experiences positively (Kaplan et al., 1972; Balling and Falk, 1982; Williamson and Chalmers, 1982; Ulrich, 1986; Kaplan and

Herbert, 1987; Smardon, 1988; Bernaldez et al., 1989). One of these physical attributes is naturality. Naturality is a powerful factor that affect choices (Kaplan et al., 1972; Purcell and Lamp, 1984; Lamp and Purcell, 1990; Yilmaz et al., 2017). Naturality is described as a preferred landscape attribute associated with plants, water and other natural elements. These are settings where natural elements such as trees, topography, grass and others are predominant. Plant and water elements are available in the study area, however planting could be improved and attention could be paid to the cleaning and maintenance of water elements to increase level of appreciation.

3.2.3. *Findings on satisfaction*

Satisfaction is an indicator of behavior and the individual behavior is affected by the sense of satisfaction (Altaş, 1994; Özsoy, 1995). The concept of satisfaction is accepted as a criterion in post-occupancy spatial evaluation. Thus, frequency distributions and percentages were calculated to determine the occupant satisfaction levels for the park (Table 6). It was determined that the satisfaction of 42.3% of the occupants were at a high level.

Table 6. Occupant satisfaction with the park

Satisfaction level	Frequency	Percentage	Cumulative Percentage
Very low	3	2,4	2,4
Low	7	5,7	8,1
Moderate	23	18,7	26,8
High	52	42,3	69,1
Very high	38	30,9	100,0
Total	123	100,0	

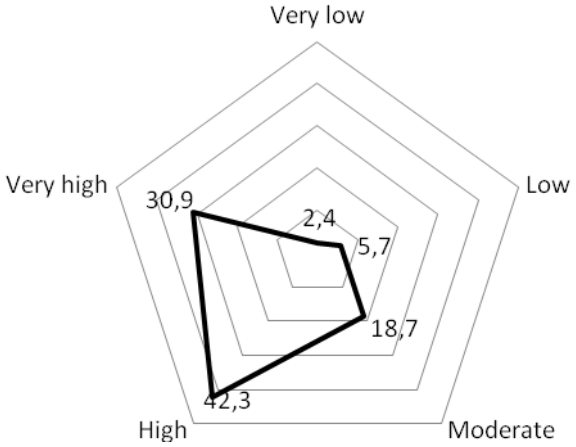

Figure 3. Occupant satisfaction percentages

Independent samples t-test was conducted with SPSS (v. 23.0) to determine whether the differences between the effects of the questions on satisfaction were statistically significant. The test results indicated that the level of satisfaction was affected by occupancy frequency, duration, the type of activities conducted, and environmental attributes ($p < 0.01$) (Table 7). Thus, it was concluded that the occupant satisfaction was an important factor in spatial occupancy and perception.

Table 7. Analysis of the differences caused by satisfaction

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Frequency	11,728	121	,000	1,730	1,438	2,022
Activity	3,736	121	,000	2,583	3,952	1,214
Attribute	15,613	121	,000	2,662	3,000	2,324
Duration	8,754	121	,000	1,615	1,980	1,249

At this stage, the effects of satisfaction on other questions were compared. ANOVA test findings demonstrated that the impact of activity type was the highest (Table 8).

Table 8. Analysis of the impact of the questions on satisfaction (ANOVA)

		Sum of Squares	df	Mean Square	F	Sig.
Occupancy frequency	Between Groups	108,192	4	27,048	306,616	,000
	Within Groups	10,409	118	,088		
	Total	118,602	122			
Occupancy duration	Between Groups	114,143	4	28,536	122,305	,000
	Within Groups	27,531	118	,233		
	Total	141,675	122			
Activity type	Between Groups	416,558	4	104,140	13,026	,000
	Within Groups	943,409	118	7,995		
	Total	1359,967	122			
Environmental attributes	Between Groups	197,480	4	49,370	224,202	,000
	Within Groups	25,984	118	,220		
	Total	223,463	122			

Open space activities have physiological, psychological and social positive effects on individuals and these activities improve self-confidence and self-esteem (Mansuroglu, 2002). Thus, activities conducted in spaces such as parks are quite important. Participation in outdoor activities improve physical, mental and social health, as well as self-confidence and self-esteem, and leads to positive changes in personal skills, social behavior, physical and personality development and general behavior (Mc Avoy, 2001). These findings support the present study finding that activity type was the most effective factor.

4. CONCLUSION AND RECOMMENDATIONS

It was determined that Trabzon Square Park became a more integrated space due to its new design after the urban transformation project. The visual impact was created using furniture (seating elements, water elements, shade elements) that prioritized perception and comfort and a sustainable space was created by improving accessibility. William H. Whyte, who is considered as a pioneer in the analysis of social occupancy of urban open spaces, has developed a useful guide for spatial design (Whyte, 1980; Whyte, 1998). Whyte summarized the provision of adequate living spaces, access to the sun, protection from the wind, food, water and vegetation as conditions for adequate occupancy of a space. The high occupancy level in the Square Park was consistent with this finding. After the urban transformation, the park became a space that met the requirements set by Whyte.

The Square Park not only provides a contemporary environment for individuals, but also offers relaxation and resting opportunities during the day and provides various activity spaces. Both occupancy frequency and duration and occupant satisfaction level were

quite high. The present study findings revealed that the park urban transformation project was a participatory project. In an effective design, regardless of the area size, the most critical factor is the satisfaction of occupant requirements that leads to overall occupant satisfaction (Francis, 2003; İnan, 2008; Düzenli et al., 2018; Block, 2013). Designing urban open spaces based on occupant needs remains one of the most important issues for designers and administrators, who work on the related field. Human requirements and conflicts and the impact of these factors on the development of urban open spaces will continue to be significant in the future. Thus, the views of both the designers and occupants should be considered in the design and administration of urban transformation projects. The project should be adaptable and flexible to allow for future revisions and improvements. For the long-term success of the project, post-occupancy evaluation and redesign should be considered when necessary (Özgüner et al., 2012; Güneroğlu and Bekar; 2017). In conclusion, especially in the renovation and redesign of the existing open spaces, it is very effective to observe the occupants and research the occupant requirements in constructing successful spaces. Furthermore, for the success of urban open spaces, the spatial design should be flexible, it should allow for future changes and improvements to meet the changing occupant requirements, and the design should be monitored and evaluated after its spatial implementation.

Renewal, ergonomic improvements, change and transformation continues in Trabzon Square Park that continues to change physically and socially. The most important point in this process is the fact that designed spaces and plans in urban transformation projects in order to meet the requirements of modernity and the era should primarily be consistent with the urban identity and texture and should take occupant requirements into account. Thus, the citizens would develop a sense of urban attachment and their satisfaction levels would improve.

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