



Evaluation of the opportunities offered by open-green spaces for urban users: A Kocaeli /Turkey Sample

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Abstract

As an industrial city, Kocaeli contains a wide variety of people from different socio-cultural backgrounds. The diversity of the population diversifies the expectations of the inhabitants for urban spaces. We studied the satisfaction and dissatisfaction status and expectations of Kocaeli inhabitants for the parks located in urban open-green spaces. In this study 650 people were randomly selected to participate in a face to face interview-based survey. The data obtained from the questionnaire was used for frequency distribution analysis, factor analysis, reliability analysis and correlation analysis. Recreational activities form the most important satisfaction factor in the study, and this factor is closely related with the gender, occupation, and economic status of the users and the time spent in spaces. Users mostly spent time in the parks during the summer (49.85%), particularly during weekends (57.80 %), for the purposes of hiking, eating and exercising (28.05 %). Management and infrastructural factors have caused dissatisfaction. Survey results concluded that the majority of the users, which is 30.20 %, find the reinforcement elements, directional signs and security insufficient.

Keywords: Kocaeli/Turkey, Urban open-green spaces, User satisfaction, User preferences.

Açık Yeşil Alanların Kullanıcılara Sunduğu Olanakların Değerlendirilmesi: Kocaeli / Türkiye Örneği

Öz

Kocaeli ili bir sanayi kenti olması nedeniyle çok çeşitli sosyo kültürel yapıdaki insanı içerisinde barındırmaktadır. Nüfusun bu çeşitliliği kent halkının kentsel mekanlardan beklentilerini de çeşitlendirmektedir. Bu araştırma Kocaeli kent halkının kentsel açık yeşil alanlar içerisinde yer alan parklardan memnuniyet ve memnuniyetsizlik durumlarını ve beklentilerini belirlemek amacıyla yürütülmüştür. Araştırmada rasgele seçilmiş, yüzyüze görüşmeye dayalı 650 kişi ile anket yapılmıştır. Anketlerden elde edilen veriler frekans dağılımı, faktör analizi, güvenilirlik analizi ve korelasyon analizi ile değerlendirilmiştir. Rekreatif faaliyetler memnuniyet faktöründe en önemli faktörü oluşturmuş ve kullanıcıların cinsiyet, meslek, gelir ve alanda geçirdikleri zaman ile ilişkili olduğu belirlenmiştir. Kullanıcılar parkları, en fazla yaz aylarında (% 49.85), özellikle hafta sonlarında (% 57.80) ve yürümek, yemek yemek, spor amaçlı (% 28.05) olarak kullandıkları belirlenmiştir. Memnuniyetsizlik faktörlerinde ise yönetim ve alt yapı faktörleri ön plana çıkmıştır. Ankete göre kullanıcıların % 30.20 'lik büyük bir kısmı donatı elemanlarının, yönlendirme levhalarının ve güvenliğin yetersiz olduğu söylemektedir.

Anahtar Kelimeler: Kocaeli/Türkiye, Kentsel Açık Yeşil Alanlar, Kullanıcı Memnuniyeti, Kullanıcı Tercihleri.

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1. Introduction

In addition to being an integral part of land-use plans, green spaces located in cities and nearby places play crucial roles in balancing the corrupted relation between human being and nature by establishing an urban ecosystem and enhancing the standards of urban life (Kuter, 2007; Gul and Kucuk, 2001). The quality and quantity of open-green spaces are considered signs of civilization, and the level of quality of life in developed countries and the mentioned quality and quantity of open-green spaces also opens a new door into socio-economic development for both a healthy environment and society. Additionally, open-green spaces are effective for the physical and mental development of inhabitants, establishing social relations, developing the identity and culture of the city and enhancing the standards of urban life. They also provide people more comfortable environmental conditions (Bolund and Huhammar, 1999; Jensen *et.al.*, 2000; Chiesura, 2004; Leeuwen *et.al.*, 2006; Tzoulas *et.al.*, 2007; Boyacigil and Altunkasa, 2010; Bulut *et.al.* 2010; Qui *et. al.*, 2013; Huang, 2014).

Open-green spaces, which are one of the most important elements of urban spaces, should be designed and planned in order to create the most suitable environment to live and should meet all the users' needs (Burns *et.al.*, 1998; Cole and Crompton, 2003; Demir *et.al.*, 2010). The most appropriate design for the users should be determined, and all the alternatives should be considered. Although users' satisfaction with the open-green spaces varies depending on their socio-economic status and the type of user they are, it is important for the spaces to serve the needs of users of different ages, genders, educational and professional groups in order to ensure an optimum-level of satisfaction. Moreover, because planning activities vary depending on user groups and types, the designs should intend to satisfy the users that will be accessing the space (Bilgili, 2001; Borrie and Birzell, 2001; Kart, 2002; Uzun, 2005; Lachowycz and Jones, 2011; King *et.al.*, 2015).

Parks constitute a large part of open-green spaces. They have influence in the aesthetical and physical quality of the cities (Elinc and Polat, 2011). Parks should improve the qualification of urban life and form of the city with their functionalities (Ender and Uslu, 2016). With their recreational functions, parks have an important role particularly in the cities. They fulfil various functions such as socializing people; enabling them to take a rest, relax and take the advantage of positive psychological effects of nature and perform various kinds of activities (Sakici, 2013). The quality of the parks determines the type of recreational activities that can be done in them. Parks, especially the ones located at the city centre, have important roles in terms of recreation. They usually provide children and teenagers with the opportunity to work outdoors (Dempsey and Burton, 2012; Nordh and Ostby, 2013). It is only possible for parks to fulfil their exact functions in terms of recreation if the park designs fully meet the users' needs and expectations. Considering the perceptions and the experiences of the users of these parks and involving these elements in the planning process and leading the designs accordingly is essential for the sustainability of the parks (Yalcinyavuz and Yilmaz, 2016).

We studied whether Kocaeli parks met the changing expectations of people from all walks of life, including the opportunities available to the users, as well as the users' level of satisfaction. We also offer suggestions for meeting expectations for open-green spaces.

2. Material and Methods

2.1. Information about the research area

Kocaeli is in the Marmara Region at 29° 22'-32° 21' E longitudes and 40° 31'-41° 13' N latitudes. The city is surrounded by Sakarya to the east and southeast, Bursa to the south, Yalova province, Bay of İzmit, the Sea of Marmara and İstanbul province to the west, and the Black Sea to the north (Akdeniz *et.al.*, 2013). Kocaeli is an industrial city, which is close to the large cities such as İstanbul and Bursa, and it is located on a first-degree seismic zone. It is one of the most densely populated cities of Turkey which is 491 people /km². These facts enhance the importance of open green spaces in Kocaeli. The parks that consist the main material of the study which are Sekapark, Doğukışla, Harikalar Diyarı. Anıtpark, Nazmioğuz Park and Demokrasi Park are most commonly used open green spaces that play important roles in urban ecosystem and physical design. Seka Park, which serves not only the inhabitants of just Kocaeli but also of the neighbouring cities, is a kind of City Park and is the very first outcome of an industrial transformation project in Turkey. It is located on 1100 acres. The park includes lawns, playgrounds for children, wooden piers in the sea, football and basketball courts, bike and jogging paths, a stage located on the beach, parking lots, artificial grass mounds, restaurants, etc. The park has the qualifications to meet the needs of the users from all walks of life. The remaining parks, which are also subject to

the study, Doğukışla Gençlik Park, Harikalar Diyarı, Anıtpark, Nazmi Oğuz Park and Demokrasi Park, have the characteristics of a local park serving the needs of several neighbourhoods around them. Harikalar Diyarı, Nazmi Oğuz and Demokrasi Parks are located by the sea. Fig 1 and Fig 2 indicates the location of Kocaeli and research areas.



Figure 1. The location of Kocaeli



Figure 2. Research areas

2.2. Survey method and evaluation of data

In the study, 650 individuals were randomly selected to be interviewed. The number of the questionnaires was determined by taking into account the size of the parks and how intensely they are used. According to this, the maximum number of the questionnaires (200) was made in Sekapark with the reason that it is a city park. On the other hand, when Harikalar Diyarı, Doğukışla and Demokrasi Parks are considered, 100 questionnaires in each were applied whereas 75 questionnaires were carried out in each of Nazmi Oğuz and Anıtpark. Surveys have been split into three parts. In the first part, users have been asked questions related to their socio-economic background (gender, marital status, age, education level, occupation, the average monthly income, where they live, etc.). In the second part, the uses of the parks have been examined, (who came to the park, which preferred park, access to the park, which uses the time in the park, etc.). Finally, in the third part, questions related to their satisfaction have been asked, and their suggestions have been further examined. There are questions about the users' satisfaction with different characteristics (location and environmental characteristics, recreational activities, social activities, transportation) and dissatisfaction with other characteristics (administration, infrastructure, maintenance, noise), which have been grouped into four groups. At the same time, satisfaction status is graded from 1 to 3, where 1 refers to being dissatisfied, 2 refers to being satisfied and 3 refers to being highly satisfied. In the preparation and evaluation of the surveys, (Armstrong *et.al.*, 2012; Belkayalı *et.al.*, 2015; Dawson *et.al.*, 1997; Demir *et.al.* 2010; Kart, 2002; Tzoulas *et.al.*, 2007; Uzun and Muderrisoglu, 2010; Uzun, 2005) have been practised on.

The data obtained from the questionnaire have been evaluated using SPSS 22 software (Statistical Package for the Social Sciences). Frequency distribution (%) values have been used for determining the socio-economic background and using habits of the users. A factor analysis determined the criteria for satisfaction and dissatisfaction. A Cronbach alpha analysis was used to evaluate the reliability of the obtained factor groups. A correlation analysis determined the relationship between the participant characteristics and satisfaction-dissatisfaction factors (Ozdamar, 2009).

3. Results and Discussion

3.1. Socio-economic structure of the users

While evaluating the socio-economic structure of those who use open-green spaces in Kocaeli, several factors were considered, including gender, marital status, age, education level, occupation, the average monthly income, where they live, the length of time that they've live in the city and the dwelling types. According to the survey results, 53.00 % of users are female and 47.00 % are male. 40.80 % of the participants are married while 58.00 % are single. However, 1.20 % of the participants prefer not to state their marital status. Age, the average monthly income, education level and occupation of the users are indicated in Table 1.

Table 1. Socio-economic structure of the users

Age (%)								
Unanswered	0-12	13-17	18-25	26-35	36-45	46-55	56-65	>66
1	-	6.3	41	29.7	12.7	5.6	3.2	0.5
Education level (%)								
Unanswered	Not literate		Primarily school	High school		University		Postgraduate
4.4	0.7		19.7	43.4		29.3		2.5
Occupation (%)								
Unanswered	Worker	Civil servant	Retired	Self employed	Housewife	Student	Unemployed	Private sector
1.7	12.9	15.3	3.9	9.2	16.3	29.3	6.9	4.1
Monthly income (%)								
Unanswered	0-500 ₺		501-1000 ₺	1001-2000 ₺		2001-4000 ₺		>4001
47.3	3.9		15.3	25.4		6.6		1.5

When the age groups of users are evaluated according to Table 1, it can be seen that the largest group using open-green spaces is in the 18-25 age group, 41.00 %, and the smallest age group is over 66, 0.50 %. As for their education level, 43.40 % of the users are high school graduates. However, 0.70 % of users are illiterate. Whereas 47.30 % of the participants do not give information about their level of income, the lowest level of income is over 4001 ₺ at 1.50 %. When occupational groups are examined, the largest group consists of students at 29.30 %. On the other hand, the smallest group consists of those who are retired, 3.90 %. The majority of users, 64.90 %, live in İzmit, which is the central district. A smaller percentage of users, 64.90 %, are from neighbouring cities, and the rest live in the following districts: Başiskele, Çayırova, Derince, Dilovası, Gebze, Gölcük, Kandıra, Karamürsel, Kartepe and Körfez.

3.2. Park-using habits of the participants

The level of park use, the most preferred park, how users travel to the park, frequency and purpose of using the park, time spent in the park and the most preferred recreational activity at the park have been examined. According to the results, the most preferred park is Seka Park, 60.60 %, followed by Anıtpark, 10.60 %, Harikalar Diyarı 9.60 %, Demokrasi Park, 8.70 % and Doğukuşla Park, 6.20 %, Nazmi Oğuz Park 4.30 (Fig. 3). Most of the users, 23.60 %, consider the distance and accessibility of the park when deciding which park to go to. Other preferred parks are the ones by the sea and quiet places, 15.30 %, the ones with prominent landscape designs and the size of the park area, 17.80 %, functional ones including various types of entities, 5.40 %, and the ones including children's playgrounds, 0.30 %. Several users, 37.60 %, state that just being an open-green space is enough to be preferred and which park it is not important to them (Fig. 4). Several inhabitants, 38.10 %, reach the parks by public transportation, whereas 31.50 % travel on foot, 22.60 % in their own cars, 3.10 % by motorbikes, 2.50 % by bike and 2.20 % by taxi.

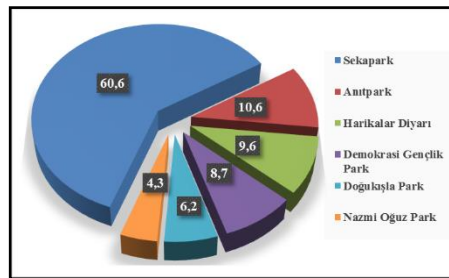


Figure 3. Utilization rates of the parks

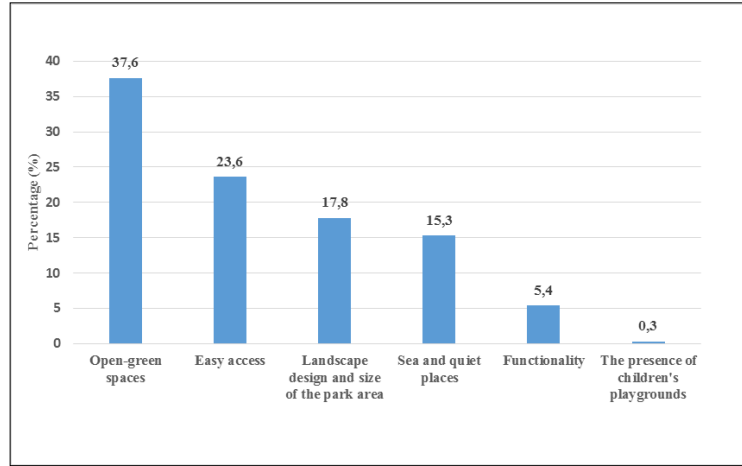


Figure 4. Reasons for preferring parks

Meaningful differences have been identified in seasonal use of the parks. The maximum use is during summer (49.85 %) and spring (21.95 %), whereas the use is less during autumn and winter (5.40 % and 1.40 %, respectively). The study also reveals that urbanites use the parks more during the weekends (57.80 %), and time spent at a park mostly varies from 1 hour to 3 hours (50.80 %). The urbanites' purposes of using the parks are given in Fig. 5. According to the data in Fig. 5, 28.05 % of the users, who use parks mostly to be able to do various types of recreational activities at once, such as walking, relaxation, eating and doing sports.

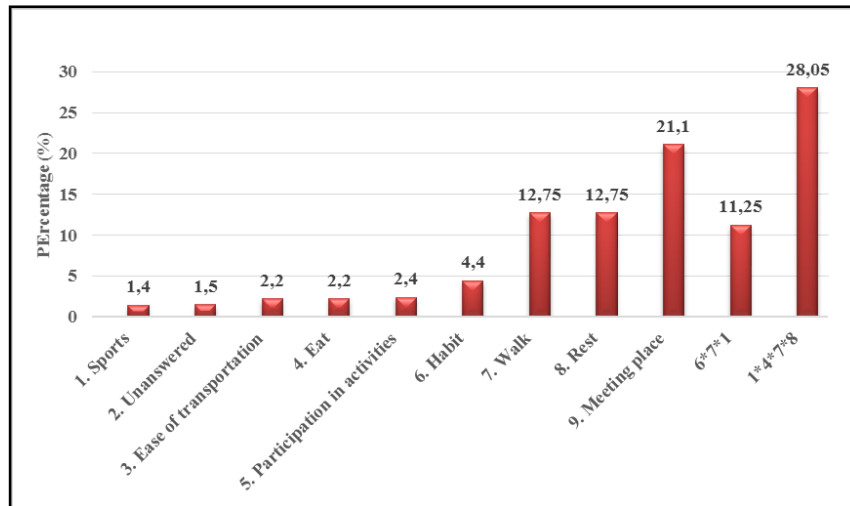


Figure 5. Purposes of using the parks

3.3. Determination of satisfaction and dissatisfaction factors for open-green spaces in Kocaeli

In the study, satisfaction factors have been classified into four groups and analyzed, and the results have been given in Table 2. According to Table 2, the 1st factor is called location and environmental characteristics, and its Cronbach alpha is 0.75, because the rate is between 0.60 and 0.80, it is determined as highly reliable. For this factor group, users state their content with the space being clean and well-kept and the sufficiency of the fitting elements. The 2nd factor is classified under the title “recreational activities”, and its Cronbach alpha is 0.70. Because the rate is between 0.60 and 0.80, it is determined as highly reliable. For this factor, users state their content with the sufficiency of children’s playgrounds and exercise opportunities. The 3rd factor group is evaluated as social activities, and its Cronbach alpha is 0.69. Because the rate is between 0.60 and 0.80, the 3rd factor is also determined as highly reliable. Most of the users state their satisfaction with being able to spend time with their friends and family members. The 4th factor is determined as transportation and its Cronbach alpha is 0.70. Because the rate is between 0.60 and 0.80, this factor is determined as highly reliable as well. Users state their satisfaction with easy access and closeness of the spaces for this factor. In the study, dissatisfaction factors have been classified into four groups and analyzed, and the results have been given in Table 2.

Table 2. Determination of satisfaction and dissatisfaction factors for open-green spaces

Satisfaction Factors		Average	Variance	Cronbach alpha
Location and environmental characteristics	Space is clean and well-kept	2.18	0.365	0.75
	Sufficient number of parking lots exists	2.15	0.407	
	The space is safe and secure	2.12	0.504	
	Sufficient fitting elements exist	2.18	0.483	
	Presence of exercise opportunities	2.12	0.577	
Recreational activities	Presence of children's playgrounds	2.31	0.483	0.7
	The opportunity of participating in various activities	2.1	0.533	
	Presence of exercise opportunities	2.12	0.577	
	Meeting new people	2.11	0.519	
Social activities	Spending time with friends and family members	2.38	0.493	0.69
	Having fun and great time	2.36	0.432	
	Closeness of the space	2.18	0.556	
Transportation	Being easily accessible	2.25	0.535	0.7
Dissatisfaction factors		Average	Variance	Cronbach alpha
Administration factors	Security gap	1.92	0.488	0.67
	Insufficient number of security guards	1.79	0.507	
	Space's being expensive	1.65	0.478	
	Insufficient direction signs	1.9	0.487	
Infrastructure factors	Insufficient lighting equipment	2	0.518	0.71
	Lack of shopping opportunities	1.7	0.571	
	Lack of a picnic area	1.97	0.578	
	Squalor of fitting elements	1.95	0.506	
Maintenance	Squalor of the paths	1.98	0.506	0.72
	Poor cleaning of the toilets	1.74	0.805	
	Garbage	1.91	0.629	
Noise factors	Crowd of the space	2.02	0.538	0.64
	Traffic noise	1.99	0.545	

According to Table 2, the 1st factor is called administration, and its Cronbach alpha is 0.67. Because the rate is between 0.60 and 0.80, it is determined as highly reliable. For this factor group, the majority of the users state their dissatisfaction with the gap in security. The 2nd factor is classified under the title "infrastructure features", and its Cronbach alpha is 0.71. Because the rate is between 0.60 and 0.80, it is determined as highly reliable. For this factor, users state their dissatisfaction with insufficient lighting, directional signs and picnic areas. The 3rd factor group is evaluated as maintenance, and its Cronbach alphas are 0.72. Because the rate is between 0.60 and 0.80, the 3rd factor is also determined as highly reliable. Most of the users state their discontent with the squalor of the paths and fitting elements and the rubbish that they see around. The 4th factor is determined as noise, and its Cronbach alpha is 0.64. Because the rate is between 0.60 and 0.80, this factor is determined as highly reliable as well. For this factor group, users state their discontent with the crowd of the space and traffic noise.

3.4. The relationship between satisfaction and dissatisfaction factors in the user profile and using habits

The study reveals a relationship between the location and environment characteristics, recreational activities and transportation of satisfaction factors with the user profile. Users who come to the spaces during the weekends and uncertain times are more content with the location and environmental characteristics. The biggest change is observed in the recreational activities factor. Female users, retired users, students and unemployed users are content with the recreational activities offered in these spaces. In addition, according to the study, a higher monthly income and more time spent in those spaces was related to greater satisfaction. When the transportation factor is analysed, it can be concluded that people with higher incomes are more satisfied with that factor. On the other hand, the social activities factor is found to have no relation with a user's profile. Our study shows that there is a relation between the administration infrastructure and maintenance factors with dissatisfaction from the user. The greatest change is the administration factor. Female users and those who are between 25 and 35 are dissatisfied with administration factor. An increase in time spent in spaces increases the level of dissatisfaction from administration factor. It is analysed that female users are dissatisfied with the infrastructure factor. Moreover, as the level of income increases, dissatisfaction with the maintenance factor increases. No relation between the noise factor and user characteristics is found (Table 3).

Table 3. The relationship between satisfaction and dissatisfaction factors in the user profile and usage habits

Satisfaction factors	Gender	Age	Level of education	Occupation	Level of income	Frequency	The time when the spaces are used	Time spent on spaces
Location and environmental characteristics	0.52	0.37	-0.36	-0.07	0,06	0.02	0.08*	0.03
Recreational activities	0.08*	-0.06	0.06	-0.10*	-0.09*	0.02	0.04	0.08*
Social activities	0.003	-0.29	-0.04	-0.01	-0.03	-0.02	0.04	0.06
Transportation	-0.01	-0.07	-0.04	-0.004	-0.09*	0.01	0.02	0.04
Dissatisfaction factors	Gender	Age	Level of education	Occupation	Level of income	Frequency	The time when the spaces are used	Time spent on spaces
Administration factors	-0.10*	0,08*	0.007	0.004	0.02	0.12**	0.01	0.006
Infrastructure factors	-0.10**	0.02	0.01	0.02	0.03	0.04	-0.01	0.02
Maintenance	-0.22	0.19	-0.006	0.01	0.10*	0.06	0.02	0.02
Noise factors	-0.06	-0.002	-0.41	0.05	0.01	0.01	-0.01	-0.03

* The mean difference is significant at the * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$ level.

3. Discussion

The need for social spaces in urban areas is increasing day by day. It is important to plan urban and local parks, which are included in those social areas, considering the needs and expectations of the users and ensuring their sustainability. In this study, commonly preferred urban and local parks by the inhabitants in Kocaeli were evaluated, problems were determined, and solutions were suggested. In Kocaeli, parks are mostly used by the age group of 18-25, high school graduates and young people living in the city centre, 41.00 %, The city's most preferred park is Seka urban park; according to user reviews, the most important reasons are its being an urban park located by the sea with its natural beauty, having easy access opportunities, diversity in fitting areas and recreational activities, sufficient parking lot and its silence and relaxing characteristics. It is determined that the users use the parks mostly during the summer (49.85 %), particularly during weekends (57.80 %), for the purposes of hiking, eating and doing exercises (28.05 %). Accordingly, it is clear that the users need recreational activities in order to get rid of urban stress and make use of their weekends. There is an obvious relation between the current study and the previous ones. Thompson (2002) stated that urban parks are preferred, and the majority of urban park users want to come by foot and will only do so on a regular basis if the park is within a 3–5 minute walk from their home or workplace. Thus, recreational activities form the most important satisfaction factor in the study, and they have a close relation with the gender, occupation, income status of the users and the time that they spend in the spaces. These findings are similar to previous studies. Aksoy and Akpinar (2011) stated that it would be appropriate to form the environment consisting of open-green spaces in accordance with users' needs. On the other hand, Wong (2009) emphasizes that hiking in urban parks and doing exercises are the most attractive recreational activities; Chiesura (2004) and Conedera *et.al.* (2015) emphasized that the usage of parks and urban green-spaces according to users' age-groups and gender. According to Uzun and Muderrisoglu (2010) and Burns *et.al.* (1998) education level, age and the time spent on spaces impact satisfaction. Demir *et.al.* (2010) underlines that as visits become more frequent, people realise the opportunities provided by the space, therefore, physical features of the space affects satisfaction level, and satisfaction status changes due to the opportunities provided by the parks.

Management and infrastructure factors influenced the level of dissatisfaction. These factors have been found to be associated with the user's profile, including gender, age and frequency of visit. According to the survey, the majority of the users, 30.20 %, find the fitting elements, such as lighting, fountains, WCs, pergolas, and directional signs, insufficient. Similarly, there have been complaints that the security and the entities located in the parks are insufficient. In particular, female users are dissatisfied with the security. On the other hand, a higher frequency of visitation increases the level of dissatisfaction in the mentioned issues. There is an obvious relation between the current study and the previous ones. Kart (2002) states that an increase in the number of female users naturally increases dissatisfaction with the security of the park. Uzun and Muderrisoglu (2010) states that as the number of users decreases in rural areas, dissatisfaction increases. Wong (2009) and Roovers *et.al.* (2002) emphasise that planning, design and administration of the parks should meet the needs of the users more. On the other hand, Aksoy and Akpinar (2011) and Onsekiz and Emur (2008) state that due to the perception of insufficient security, the use of the parks at later hours in the evenings decreases. Cetinkaya *et.al.* (2015) state that the most important factor affecting dissatisfaction is maintenance-repair factor. Chiesura (2004) and Page *et.al.* (1990) have emphasised the importance of user satisfaction in the park management plan.

4. Conclusion

Consequently, in Kocaeli, the demands and needs of the users should be considered in order to enhance the quality of the parks and the services they provide. Parks should be improved so that users from all walks of life can make use of them, and areas that are suitable for the old and the disabled should take priority. Administration and infrastructure features should be reconsidered and security problems (lighting, robbery, pedlars, direction signs etc.) should be dealt with through good planning.

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