

## Chapter 9

# Achieving Inclusion in Public Spaces: A Shopping Mall Case Study

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### 9.1 Introduction

Designing inclusive spaces can be seen as a response to accommodate diverse people within the built environment as efficiently, effectively, and satisfactorily as possible, regardless of health, body size, strength, experience, mobility and/or age. Although technological innovation has brought many benefits into architecture and planning, it is still difficult to embed inclusive design into real-world applications. Reviewing the literature on inclusion in the architectural design context indicates that an in-depth understanding to the diverse user of matching marketing purposes is lacking. Consequently, defining the user in the built environment as an ‘average person’ creates user-unfriendly public spaces. “Design exclusion does not come about by chance: it comes about through neglect, ignorance and a lack of adequate data and information” (Cassim *et al.*, 2007). One of the main reasons for that is: most design practitioners are unable to take inclusive design into account during the initial phases of the design process, which leads to wrong decisions that can have a large impact on the overall design success and cost. The second reason is related to theory-practice inconsistency (Afacan and Erbug, 2009). Although there are guidelines and accessibility standards, designers have difficulty in utilising this academic source of information (Gregor *et al.*, 2005). However, Nicolle *et al.* (2003) added, “Designers are under a great deal of time pressure: if knowledge is not presented in a usable format, it will be either discarded or ignored.” Therefore, although most designers are aware of universal design, problems appear in the integration of theories and guidelines into design practice (Demirkan, 2007).

Despite the extensive literature on inclusive design, it is not easy to navigate the mass of data and interpret it into the cultural context. In Turkey, in the last decade, there has been a rise in the number of elderly and disabled people. It is traditional in Turkey to give a place of respect to the aging population in public spaces. However, compared to Europe and the US, there are still problems of integration of elderly and disabled people into social life because of environmental barriers, such as lack of ramps, disabled toilets, and inaccessible entrances to

buildings. According to the Turkey Disability Survey (2002), most disabled people are still excluded in public spaces because designs do not provide the same opportunities of use for all users. Although the Turkish government realised the importance of inclusion within built environments and is developing policies (Republic of Prime Ministry Administration for Disabled People, 2011), still there is a need of studies to promote a positive attitude to inclusive design in the public, to encourage designers to design inclusively, and to make society sensitive and informed about diverse user needs, capabilities and expectations.

This study is a further step of the previous study by Afacan and Erbug (2009), which promoted an interdisciplinary heuristic evaluation process for the universal usability of shopping malls. Afacan and Erbug (2009) highlighted the importance of working together with various design professions to lead to inclusion in real applications. According to this study, the lack of empathy for the requirements of diverse users is one of the three critical issues that make it difficult to integrate the inclusive design into current design practice. So, this study now delves deeper into how to include shopping malls from the user perspective. The aim of the study is not to evaluate the building performance of the case building, rather to focus on what makes a shopping mall more inclusive and how important each of the universal design criteria is in defining a mall as a user-friendly public space.

## **9.2 Inclusion in Public Spaces: Shopping Malls in the Turkish Context**

Achieving inclusion means embracing difference and celebrating human diversity. Inclusiveness is crucial for design success, business power and socially responsive societies. Since a public space is defined as a building that must accommodate everybody regardless of age, ability and size, the architectural features of those spaces need to adapt to these differences (Grosbois, 2001). Everyone needs to be part of society through the use of public buildings (Build for all manual, 2006). “To achieve this, the built environment, everyday objects, services, culture and information - in short, everything that is designed and made by people to be used by people - must be accessible, convenient for everyone in society to use and responsive to evolving human diversity” (EIDD, 2004). In that respect, focusing on enabling environments, which means featuring physical and intellectual accessibility and the sustainability of built structures, together with their impact on work, mobility and leisure within the community (Build for all Manual, 2006), will help to make the world more inclusive, bringing the government on board and engaging with users, in terms of expectations and cost implications.

Public space in the study is exemplified by a shopping mall. Shopping malls are particularly important for leisure activities in large urban centres, which should ensure that all people are equally welcome and that all visitors can participate in facilities that have no design stigmatisation and that enrich their lives and enhance autonomy and flexibility (Resolution ResAP 3, 2001). Inaccessible public buildings for leisure activities are obviously holding disabled people back from

productive spheres of society (Haque, 2005). Moreover, the changing leisure and consumption patterns of Turkish people have made shopping malls among the most important additions to urban life in Turkey (Erkip, 2003). Within ten years (from 2000 to 2010), the number of shopping malls in Turkey has increased tremendously due to structural reforms and the introduction of foreign capital. “Crowding, traffic problems, and lack of pedestrian safety in the city centre served to create demand for these new areas” (Erkip, 2003). Although these malls currently provide a modern well-maintained atmosphere, their spatial and social characteristics still leave much to improve in terms of common activities, social participation, independence and well-being. As Lebbon and Hewer (2007) say, researching inclusion in those spaces is divided between three broad communities: business, design professionals and design education. However, the user is always at the heart of these three paths. Thus, seeing user issues from a wider perspective will not only encourage designers to design for inclusion, but also help society to increase awareness about enabling environments and develop empathy with others. Therefore, this study does not limit the impact of a shopping mall to the field of consumption only, but also highlights its importance in supporting inclusion as part of social and environmental considerations.

## 9.3 Methodology

### 9.3.1 Data Collection

This exploratory study on investigating diverse users’ needs, capabilities and expectations was carried out in a shopping mall in Ankara, Turkey. The selected building is one of the biggest of six shopping centres in Ankara. It has an indoor area of 12.70m<sup>2</sup> over nine storeys (five storeys for leisure facilities and four storeys for car parking) and was built in 2007. It also includes a hypermarket, 195 shops, nine cinemas, cafes, food court, an entertainment centre and offices.

A survey instrument with a comprehensive list of 110 items was developed to gather data. It is based on a structured questionnaire format with close-ended questions. As in Afacan and Erbug’s study (2009), the questions in the survey instrument were grouped under five categories with reference to the seven universal design principles. Based on Danford and Tauke’s (2001) definitions these five essential design elements of a universal city, which should be considered when applying the seven principles of universal design in built environments, are as follows:

1. circulation systems: ramps, elevators, escalators, hallways, and corridors;
2. entering and exiting: identifying and approaching the entrance and exit and manoeuvring through them;
3. wayfinding: paths/circulation, markers, nodes, edges, and zones/districts; and graphical wayfinding: text, pictogram, map, photograph, and diagrams;
4. obtaining product/services: service desks, waiting areas, and shops;
5. public amenities: public telephones, restrooms (toilets), and seating units.

### 9.3.2 Procedure

A total of 120 randomly selected users participated in the survey, including 40 adults (between ages 25-55), 40 elderly (between ages 56-85) and 40 adult with impairments including 20 physically impaired adults (between ages 28 and 51) using wheelchairs ( $n = 13$ ), prostheses ( $n = 7$ ) as mobility aids and 20 visually impaired adults (between ages 30 and 59) having total loss of sight ( $n = 7$ ) and mild loss of sight ( $n = 13$ ). The data were collected during face-to-face surveys with all the participants in a café of the mall. At the beginning, a brief summary of the procedure and the aim of the study was explained. In the survey, participants were asked to rate their importance level for each item on a scale of 1-5, (1 being the least important and 5 the most important) and to mark the appropriate boxes to identify how important each features is in spending time satisfactorily and comfortably in a inclusive public space. The items that may not have been clear to participants were explained as part of the questionnaire. Further information was obtained through an unstructured interview. Further, to avoid any biases, participants were not allowed to listen to others while they were being surveyed.

## 9.4 Results and Discussion

The ratings of the participants on 110 items were analysed with the Statistical Package for the Social Sciences (SPSS). First, exploratory factor analysis was used to carry out data analysis. Through the Varimax method, a frequently used rotation option (Argyrous, 2005), a rotated component matrix was constructed to identify the number of potentially interpretable factors among the set of correlations within the data. The matrix indicated the extracted factors with their factor loadings.

### 9.4.1 Development of Inclusive Public Space Factors

Before carrying out factor analysis, firstly the survey instrument is checked whether there are any items creating floor and/or ceiling effects. It means that items at the extreme ends should be eliminated. Since the scale used in the study is 5, items below 1.5 and above 4.5 are regarded as extreme ends. There were no items at the extreme ends. Secondly, the strength of the correlations among the survey items was calculated through exploratory factor analysis, which helps identify common issues and exclude unrelated ones. Pearson product-moment correlations of the response scores were calculated and a correlation matrix was constructed, in which all the response items were illustrated in rows and columns of statistical relationships with a correlation score. Items having a correlation score lower than 0.30 are avoided for the study, because for a useful statistical approach a correlation coefficient of 1.00 indicates a perfect association between two variables (Argyrous, 2005). However, in the study all correlations between item response scores were greater than 0.30.

The study defined factor loadings in excess of 0.55 as suitable and excluded factors with factor loading values below 0.55. Total variance of factors was calculated. “Total variance shows all the factors extracted from the analysis along with their eigenvalues, the percentage of variance attributable to each factor, and the cumulative variance of the factor” (Mieczakowski *et al.*, 2010). So, factor analysis resulted in a five-factor solution that accounted for 54.646% of the total variance, 110 items had 54.646% variances in common, so they correlated highly with five common themes; each theme was considered to be a factor (Table 9.1.).

**Table 9.1.** Total variance explained

Factor	Scale	Eigenvalue	Variance	Cumulative
1	Circulation consistency with user expectations	8.041	21.385	14.078
2	Ease of access to services	3.698	11.239	22.340
3	Multiple path of travel	3.054	7.361	32.124
4	Comfortable use of services	1.990	6.123	42.125
5	Appropriate use of tactile and audio-visual design features	1.537	5.038	54.646

The inclusive meanings assigned to the five factors are explained below:

1. Factor 1, ‘circulation consistency with user expectations’ is defined by equitable and simple use of the stairs, moving ramps, elevators and escalators. The appropriate uses of the tactile, aural, visual design features to maximise their legibility are as important as ease of use of circulation elements. Variables on this factor also include provision of clear surfaces for effective manoeuvring, which is an essential design consideration of public spaces for physically disabled people.

2. Factor 2, ‘ease of access to services’, deals with using shops, waiting desks and other public services with low physical effort and equitably. Walking along unimpeded should be a consideration for all people. Any level changes can create barriers for all disabilities and should be avoided or replaced by gentle slopes.

3. Factor 3, ‘multiple path of travel’, is defined by flexibility and simplicity of circulation, entering/exiting and way finding. Diverse choices of these elements help create inclusion in public spaces. Variables on this factor also include entering and exiting with low physical effort.

4. Factor 4, ‘comfortable use of services’, is defined as being use with low physical effort. Comfort in the public spaces can be achieved with lighting, public seating and sheltering structures. A calm, welcoming, user-friendly atmosphere of the shops and urban facilities is required by everyone (Burton and Mitchell, 2006). All components of the services should be designed to be comfortable and safe to reach.

5. Factor 5, ‘Appropriate use of tactile and audio-visual design features’, is defined by the provision of perceptible information. Public space should help all people regardless their ability to understand where they are and guide them the way they need to go. Legible spaces with clear signs and tactile surfaces are easy to navigate.

Most of the participants had lots of interesting and useful ideas and comments on how to improve a shopping mall and public space. Table 9.2. lists commonly made suggestions.

**Table 9.2.** Reported suggestions for improvement of a public space

<b>Design Elements</b>	<b>Suggestion for improvement</b>
Circulation	More elevators
	Smooth ramps
	Wider pedestrian walks
	Adequate clear space in circulation elements
Entering and exiting	Ease of access to entrances/exits
	Adequate dimensions
	Clear path to/from the site
	Close to car park
Wayfinding	Understandable signs
	Ease of navigation
	Simple layouts
Obtaining product/services	More and comfortable waiting areas
	Wide passages in shops
	Ease of reach to all products
	Knee spaces at desks
Public amenities	More disabled toilets
	Audio-visual features in ATMs
	Ease of reach to public telephones
General	Audio-visual design features
	Textured floor material
	No obstructions on pavements
	Enough car parking
	Knee clearances

### 9.4.2 Correlation Differences in Diverse User Groups

The study also utilised ANOVA analyses with Bonferroni post-hoc comparisons on each factor scale score and calculated the *F*-ratio in order to analyse whether the scale means of the user groups were significantly different from each other. The study found statistically significant differences between the user groups in factors 1, 3 and 5. Both the physical and visual impairments of users can affect the design and usage of a public space. For factor 1 and 3, the mean values indicated that most of the adults found simple and intuitive use of means of circulation moderately important, whereas physically impaired and elderly participants consider using circulation with low physical effort more important. Most of the physically impaired participants want to enter/exit easily and see multiple choices for entering

and exiting. For visually impaired, it was difficult to use elevators without audio-visual systems, so they found legibility more important. During the unstructured interviews regarding circulation, the elderly participants stated that they have a fear of falling and getting lost while they are spending time in a public space. For factor 5, most of the visually impaired participants emphasised the importance of having perceptible information for the use of public space elements (toilets, public phones, and doors). Since most of the services do not make use of a variety of techniques, such as colour-contrasts, Braille markings, large-print readouts, 16 of 20 participants with visual limitations had difficulties in knowing where and how to use what. However, the others (adults, elderly and physically impaired) considered safety features and warning of hazards more important. Furthermore, all participants regardless of their ability or disability found equitable use of public amenities very important.

## 9.5 Conclusions

This study shed light on the needs, capabilities and expectations of diverse user groups in a shopping mall. The majority of the participants (regardless of their ability) stated that current real-world applications do not consider diverse user expectations and public spaces are designed for an average person which leads to exclusion. The most commonly offered improvements are understandable signs and ease of navigation. The graphics in signs are small to read for the elderly and difficult to understand for visually impaired people. Regarding navigation, all people experience problems because of obstructions and level changes.

The results of the study relate highly to the design principles and recommendations that have been explained by Burton and Mitchell (2006) for inclusive urban design. According to Burton and Mitchell, there are six key design principles; (1) familiarity, (2) legibility, (3) distinctiveness (4) accessibility, (5) comfort, (6) safety, which make urban life more inclusive, easy and enjoyable for all members of society. Although these six principles are suggested for 'streets for life', both they and the factors developed in the study emphasise the urgent necessity of allowing equal access and opportunity regardless of ability and size. The results of this study also provided an understanding of the importance levels and attitudes of users towards inclusive environments that maximise quality of life. The developed factors highlight the significance of a user-friendly public space, which provides many ways of contact for elderly and disabled people. Since high quality in public space design is also a key consideration for sustainable communities both in Turkey and all over the world, equality of access and opportunity should be achieved to meet inclusion targets and to eliminate the disabling effects of built environments. However, more analysis should be conducted in other public spaces and outdoor areas, such as restaurants, cafes, museums, theatres, libraries and parks. Future research will continue to develop methods and tools to help designers achieve inclusion in public spaces.

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