Post-Occupancy Evaluation: A Diagnostic Tool to Establish and Sustain Inclusive Access in Urban Open Spaces
Case Study: Kyrenia Town Centre

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ABSTRACT

Urban centres offer extensive choices and opportunities to their users for participation in cultural, economic, political and social activities. Inclusive urban centres accept user differences or segregation they also create potential to achieve more from social justice and inclusion which is a process of well-being by providing social engagement, health outcomes and economic welfare.

To provide clear access to desired facilities in town centres, a more influential way is to increase the quality of life for society. Inclusive access is a chief quality which has been designated the functionality of an urban open space by vulnerable user groups as people with disabilities. Satisfying inclusive access in the town centre is dependent on the design strategies which include solutions for maximal use of urban open spaces. Those design strategies must address the environment-fit design model that entails the adaptation of the built environment with suitable arrangements towards a broader range of capabilities.

Post-occupancy evaluation assists to clarify the real quality and performance of urban centres. It is also a powerful tool which refers to make a diagnosis of the inputs of inclusive design guidelines and enables design experts to determine the preferences and needs of users via evaluations from the users' perspective. In this study; a new model of post-occupancy evaluation methodology is suggested for establishing and sustaining social inclusion in urban centres. The post-occupancy evaluation was carried out to test inclusive access in the Kyrenia Town Centre for both disabled and non-disabled people. A survey and structured observations with behavioural mapping

were used to examine urban space users' preferences, needs and satisfaction levels regarding desirable qualities of urban centres: adaptability, safety, comfort, dignity, density, legibility and autonomy. By using representatives samples, systematic observations were performed to obtain data necessary to complete behavioural maps and then a survey was conducted.

As a conclusion, the survey findings showed that Kyrenia Town Centre possesses physical and social barriers, which represents challenges for both disabled and non-disabled users. Accordingly; the post-occupancy evaluation could be beneficial for the development of inclusive design policy and it should be one of the important stages of the design process to determine the necessities of the most inclusive environment by disabled people as well.

Keywords: post-occupancy evaluation, inclusive access, disability, urban open space, Kyrenia Town Centre

ÖZ

Kent merkezleri kullanıcılarına kültürel, ekonomik, politikal ve sosyal aktivitelere katılım için birçok seçenek ve fırsatlar sunmaktadır. Kapsayıcı kent merkezleri yalnızca kullanıcı farklılıklarını veya ayrımını reddetmekle kalmayıp, kullanıcıların ihtiyaçlarını karşılayan kentsel açık alanlar sağlayarak sosyal eşitlik ve sosyal sürdürebilirliği de sağlarlar.

Şehir merkezlerinde arzulanan aktivitelere katılımı sağlamak için en etkili yol, toplumun büyük kısmının yaşam kalitesini artırmaktır. Kapsayıcı erişim, engelli insanlar da dahil olmak üzere savunmasız kullanıcı grupları tarafından kentsel bir açık alanın işlevselliği olarak belirlenmiş temel bir niteliktir. Şehir merkezinde kapsayıcı erişimin sağlanması, kentsel açık alanların maksimum kullanımına yönelik geliştirilen çözümlere ve tasarım stratejilerine bağlıdır. Bu tasarım stratejileri oluşturulurken, yapılı çevrenin daha geniş kullanıcı kitlesine uygun olması için gerekli olan düzenlemeleri ele alan tasarım modelinin göz önünde tutulması gerekmektedir.

Kullanım sonrası değerlendirme, şehir merkezlerinin gerçek kalitesini ve performansını ortaya koymak için yardımcı olur. Aynı zamanda, kapsayıcı tasarım kılavuzlarının girdilerinin kontrolünü yapan güçlü bir araçtır ve tasarım uzmanlarının, kullanıcıların bakış açısından değerlendirmeler yoluyla kullanıcı tercihlerini ve ihtiyaçlarını belirlemesini sağlarlar. Bu çalışmada; Kent merkezlerinde sosyal bütünlüğün oluşturulması ve sürdürülmesi için, “Kullanım Sonrası Değerlendirme Modeli” önerilmiştir. Bu araştırmada, Girne Şehir Merkezinde hem engelli hem de engelli olmayan kullanıcılar için kapsayıcı erişimi test etmek için kullanım sonrası

değerlendirme yapılmıştır. Kentsel alan kullanıcılarının tercihlerini, ihtiyaçlarını ve şehir merkezlerinin arzu edilen niteliklerine ilişkin memnuniyet düzeylerini ölçmek için anket ve gözlemler ile birlikte davranış haritaları kullanılarak: uyum kapasitesi, güvenlik, konfor, saygın kullanım, yoğunluk, okunabilirlik ve özerklik kriterlerinin derecesine bakılmıştır. Davranış haritalarını tamamlamak için örnek olarak seçilen alt mekanlarda sistematik gözlemler yapılmış ve ardından anket araştırması uygulanmıştır.

Sonuç olarak, anket bulguları Girne Şehir Merkezi'nin hem engelli hem de engelli olmayan kullanıcılar için güç olan, fiziksel ve sosyal engellere sahip olduğunu göstermiştir. Buna bağlı olarak; kullanım sonrası değerlendirme, kapsayıcı tasarım politikasının geliştirilmesi için yararlı olabileceği ve toplumun engelli kesimlerinide dahil ederek en kapsayıcı ortamı yaratmak için neye ihtiyaç duyulduğunu belirlemek üzere tasarım sürecinin önemli aşamalarında biri olmalıdır.

Anahtar Kelimeler: kullanım sonrası değerlendirme, kapsayıcı erişim, engellilik, kentsel açık alanlar, Girne Şehir Merkezi

To My Lovely Son Hazar

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LIST OF ABBREVIATIONS

ADA	Americans with Disabilities Act
ATM	Automated Teller Machine
EC	European Council
FETD	Framework Equal Treatment Directive
FQI/FPI	Functional Quality Indicators/Functional Performance Indicators
ICIDH	International Classification of Impairment, Disability and Handicapped
KTC	Kyrenia Town Centre
POE	Post-Occupancy Evaluation
RIPI	English Royal Town Planning Department
TSI	Turkish Standard Institute
UN	United Nations
UTCTEA	Union of the Cyprus Turkish Engineers and Architects
WHO	World Health Organization

Chapter 1

INTRODUCTION

The quality of life is not a new concept, the debate on well-being and happiness, dates back to Plato and Aristotle. The issue of life quality has gain priority in the inquiry of diverse disciplines for several decades. Following urbanization problems; 'the quality in an urban space' particularly become to be a significant research agenda in the field of urban design and architecture. The missions of built environment professionals have shifted to create more optimal living environments for users and people-centred design has become a popular trend. Whereas traditional urban design approaches gave priority to aesthetical issues, the contemporary approaches include design solutions towards creating more responsive outdoor environments which are meaningful, usable and practical for occupants. In those researches; special attention has been extremely put on formulating an effective way to reconsideration of environmental quality of urban space.

Literature survey revealed that it is possible to categorize completed studies that focus on the quality of built environment into two main research groups; 'Design-Based Research Approaches' and 'Post-Occupancy Evaluation'. While Design-Based Researches have objectives on the development of new concepts and they are implemented during the design processes; Post-Occupancy Evaluations (POE) are more systematic and rigorous research methods that assess designed and occupied environment from the perspective of its users.

The use of post-occupancy evaluation should be a mandatory step in design, because it assists built environment professionals to clarify the weaknesses and threats of past design decisions during the occupancy process and creates opportunities to enhance environmental quality in the direction of explicit and implicit user needs. In POE studies, the criteria for judgement is particularly related to user needs and so it could be reached more valid and reliable data.

To achieve their expectations from the environment, occupants wish to obtain a more suitable environment. This philosophy indicates that the people-environment interaction is a two-way system, if the alternation of environment toward people needs is impractical; individuals are not passive and try to change the environment while at the same time the environment affects and changes them. If individuals neither change nor adapt to their environment, they may prefer to leave the environment as a third condition. In this stage; Post-occupancy evaluation becomes important by providing a feedback loop for immediate problem-solving. POE studies are mainly based on the performance measures which help to increase livability and usability of the built environment as well as user's satisfaction and attachment to the occupied environment.

Since 1960's diverse researches on POE was attended among social scientists, designers, and planners. The first attempts in conducting POE were initially grew out of the evaluation settings such as housing, college dorms and residential institutions (Preiser, 1988). In 1970's researchers identified new data collection tools and techniques for POE and the term of POE was initially started to be used in literature (Preiser and Nassar, 2008). Office buildings, hospitals, veteran hospitals, military and government facilities were among examples of POE in that time. During 1980's public

agencies launched further structured processes to organize information and decisions in their building delivery processes. These agencies including Public Works of Canada and US Postal Services extended building evaluation as a further step in gathering and managing information (Kantrowitz and Farbstein,1996; Zimring, 2001). In that period; POE became to be applied for multi-purpose spaces and retail complexes. Diverse POE studies were carried out in UK, Canada, New Zealand, Australia and the United States. In 1990's POE was used to conduct research about the living environment in the process of design, planning and maintenance that provide critical outcomes on the short and long term planning issues (Akad and Çubukçu, 2006). Between 1995-2005, POE gained a serious position and especially implemented for the performance evaluation on facility designs and management programs of numerous organizations and governmental agencies.

Since last decade, the POE was particularly used as a special evaluation method and applied by using diverse variables regarding task performance, privacy, communication, safety and thermal comfort. Such measures were done as an individual or team or site, by carrying on a quantified format, which can range from simple to complex inquiry of concerns (Mallory-Hill, Preiser and Watson, 2012). Nowadays; environmental assessment is still an ongoing process to follow a range of social trends toward human rights, accountability, consumerism, democratization, accessibility and sustainability.

Across the World, over 50,000 post-occupancy evaluations were completed by the beginning of the 2000s (Betchel, 2000). Post-occupancy evaluation regarding the inclusive access needs of people with disabilities in the urban space have mainly

limited focus and this little attention has been given to requirements of wheelchair users, children and the elderly. In addition, there has not been any research conducted to define the inclusive access needs of disabled and non-disabled people together.

The functionality of urban open spaces enhances the quality of life and livability of cities. The needs and expectations of disabled users are mainly ignored or not sufficiently considered in urban design and planning approaches. The urban space quality is generally defined for the majority of the population, whereas a minority has to cope with overcoming their handicaps. Weak and insufficient functional performance of urban spaces fosters a sense of isolation and exclusion for the disabled users.

An ‘inclusive access’ is a chief quality that ensures usability of space regardless of user’s age, gender or ability. Inclusive access could be achieved with suitable design decisions that cover solutions on maximal use via design strategies including environmental arrangements that fit a broader range of capabilities (Tabbarah, Mihelic and Crimmins, 2001). To develop and sustain a highly inclusive urban space, it is essential to define the inclusive access criteria and issues that enhance functionality of urban space facilities. Adaptability, safety, comfort, dignity, density, legibility, diversity, autonomy are the selected key qualities of this study that provide more inclusive and accessible built environments for people with physical disabilities.

Achieving inclusive access depends on the determination of such necessary design qualities and it should be defined within the urban design agenda which should be supported together with other significant dimensions: adopting an inclusive design approach, increasing opportunities for seamless travel, providing a collaborative

approach to inclusive design policies, legislating on inclusion, delivering participatory design actions and raising public awareness and also applying environmental measures and performance measures.

The aim of this study is to investigate inclusive access criteria and explore the importance of post-occupancy evaluation (POE) for establishing and sustaining social inclusion in urban open spaces of city centres. The post-ocupancy evaluation model was suggested for appraising urban open space's accessibility and usability for people with and without physical disabilities. In the study; the POE criteria was developed by considering inclusive access of people with a range of mobility capabilities in terms of health, age and income level.

In this study; a post-occupancy evaluation was carried out in the Kyrenia Town Centre. Kyrenia is one of the coastal settlements on Cyprus, having a mixed-used, recreation-focused urban core with various historical, architectural and cultural points of interest. The urban core offers diverse opportunities to both local people and tourists because it is an attractive place to live, work and recreate. When the urban core became dysfunctional and its quality deteriorated due to accessibility problems, the local authority decided to rehabilitate it by providing accessibility in urban open spaces. The enhancement scheme was introduced in 2005 as an attempt to make the Kyrenia Town Centre accessible for all users, especially disabled pedestrians. Since the project is still incomplete, the post-occupancy evaluation will be beneficial to its progress.

In order to achieve the aim of the study; a new framework of POE methodology was established to diagnose necessary links between inclusive access criteria and urban design considerations. The main emphasis was also given both physical and social

environmental quality that helps to identify the real situation of how urban open space performs for its users. Accordingly, implementation of the POE model can serve as feedback for designing and planning of inclusive urban centre.

1.1 Problem Definition: Disabled People Inclusion in Urban Open Space

Disability is adopted as "the situation of an impaired person as the result of contemporary social organisation which makes no or little account for that person" (English Union of the Physically Impaired Against Segregation`s (UPIAS) p. 3-4, 1976, Oliver 1990, p:11, ed. in Gümüş, 2008, p.3). An open access to goods and services significant section of disabled people`s lives related to their ability to gain access to particular places. Ableist nature design concepts have led to the production of `close urban landscapes` for disabled users.

> . . . when we refer to ableist environments we are talking about spaces in which people with disabling differences are multiply disadvantaged; where lack of access to spaces everyday life and spatial isolation are compounded and complicated by such facets of social exclusion as poverty, inadequate support services, barriers to inclusion in significant social institutions, and negative reactions to the presence of disabled persons in space constructed as `able-bodied` (Cormode, 1997, p.382).

Disablist nature of urban design is to oppress disabled people to stay in their homes without going to school, employed, participate recreational life or cultural activities; visiting their family or friends. They are marginalized, disadvantaged and excluded or described as 'deserving poor' which are generally assumed as an unimportant and unskilled population with their special needs (Imrie and Wells, 2001).

Improper design of urban open spaces hinders full accessibility and participation of people with disabilities. The existence of physical and social barriers makes urban

spaces unusable and these barriers cause the urban space to be defined as ‘design-apartheid’ whereas planners, architects and building control officers are responsible for the construction of those spaces which ‘lock disable people out’ and ‘prioritise the dominant values of the able-bodied community’ (Kitchen, 1998). Physical barriers are related to architectural barriers which are produced by unsuitable design of the built environment. Uneven surfaces, narrow pavements, steps without ramps, insufficiently designated road crossings, high kerbs, uneven paving surface, slippery surfaces, poorly placed street furniture, insufficient parking spaces, raised manholes on the pathways, improperly designed curb ramps at pedestrian crossings, unlit bus stops, inaccessible public transportation services, inaccessible public toilets are among the instances of these barriers.

Social barriers could be taxonomied as institutional/procedural and cultural barriers. While the exclusionary forms of institutional practices, attitudes of service providers, absence of participatory planning actions, discriminatory policies and legislations towards disabled people are belong to institutional/procedural barriers. Cultural barriers involve undesired societal attitudes due to cultural norms on disability issue. Therefore; both physical and social environment must be changed to eliminate all these barriers.

According to statistical data of the World Health Organization (WHO), currently, around 10% of the global population (one billion people) lives with their disabilities in the World and the disabled population is the largest minority population group on the earth. The WHO also estimates that the number of adults aged sixty-five and over will be more than all children under the age of five within five years. In 2050, older

adults will be outstrip all children under the age of fourteen. Since the global population is rapidly rising, 90% of individuals will probably be architecturally disabled in some way or other at some point in their life (Wylde et al.,1994).

The urban population is growing three times faster than the overall population. Three-quarter of the World`s people will be disabled city dwellers. All cities around the World need to be arranged for the large influx of disabled inhabitants, including the elderly, children and other type of disadvantaged individuals (Girardet,1996). However; the city dwellers are mainly confronted with environments that were planned according to the visions of experts. Some such experts may be insensitive to people's needs and aspirations, especially those of disabilities. Disabled citizens frequently receive limited benefit from urban open spaces of city centres, due to accessibility and usability problems. These dramatic statistics need to be considered by experts that there is an urging necessity for inclusive cities which embrace all the humanity (Goodall, 2010).

Inclusive or universal design refers to regard all users' needs and intended design solution to provide a non-segregated environment which allows each people to participate in contemporary city life. Apart from accessibility, the inclusive/universal design concept has origins that are founded on performance and social justice. Integrating main principles of inclusive design can improve livability and life quality of almost the entire population including disabled people. From this point of view; 'Inclusive practice has to be the norm' to which extend identification of essential strategies by interconnecting design and implementation policies towards elimination of barriers. The priorities should be given to provide a systematic and necessary

framework on an environmental design by committing strategies on sustaining inclusion in urban open space.

1.2 The Importance of Functional Performance Measure for Inclusive Access

The “new paradigm” for disability has emerged for four decades. Researchers began to investigate the dynamic interplay between person and environment, rather than individuals or environment alone. Accessibility and inclusive design, are among the important sub-streams of the disability paradigm and they hence become to be significant indicators of contemporary environmental studies. The concept of inclusive access was intended for safeguarding the participation of disabled people in social and economic life.

The increase of functional quality or performance of urban open spaces is dependent on the provision of inclusive access. The performance of activities includes complex relationships between the person, his or her activities and the environment. To sustain, well-designed urban centres, the basic necessity is to understand the abilities and demands of different users and inclusive access could be considered as the relation between the functional capacity and environmental demand and a balance should be achieved by making suitable provision.

Inclusive access promotes the functionality of urban space for vulnerable user groups as disabled individuals and it upholds a design philosophy that answers to everyone’s needs. In urban centres, accessibility of disabled users should be identified in three significant premises that concerns mobility of those who come into sight in using private transport (Gant, 1992; Gant, 1997), travels taken on foot (National Consumer

Council, 1988; Transport 2000, 1988; ed. in Gant, 1997, p.723) and travels with private or public transport and complete begin and end of their journeys as pedestrians (European Commission of Ministers of Transport, 1990; ed. in Gant, 1997).

Inclusive access policies can increase equal and convenient use of the built environment. Planning authorities must take into account suitable inclusive access policies at all levels of the development plans. Standards that outline inclusive access policies seek to ensure necessary physical, social and sustainable infrastructure (Goodall et al. 2010). Accordingly; the implementation of accessibility standards is an effective solution for creating a livable urban environment for people with disabilities. The functional performance of urban open space should be questioned in terms of user's needs and demands. This will be a more pragmatic action before planning, designing and refurbishing the urban environment. The quality and performance measures can sustain ongoing improvements of urban design projects.

1.3Aim and Objectives of the Research

The main aim of the research is to develop a post-occupancy evaluation model for establishing and sustaining inclusive access of people with and without physical disabilities in urban open spaces of city centres. In order to achieve the aim of a study; a model of post-occupancy evaluation methodology was initially established to identify essential links between inclusive access indicators and urban design considerations. Based on this POE model, the main emphasis was given to both physical and social environmental quality to help identify the real situation of what urban open space performs for its users.

This model will be also used as a diagnostic tool for establishing and sustaining inclusive access in urban open spaces and also it will be applicable in other urban studies which questions `functionality` and `inclusion in urban space`. The theoretical model has a practical character.

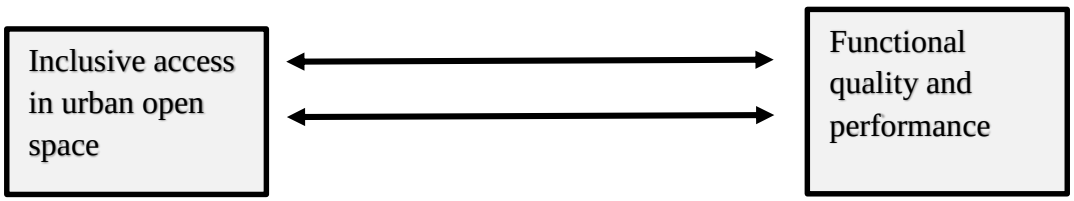
The main objective of the thesis is to define inclusive access needs and preferences of people with and without physical disabilities in urban centre. Therefore; the POE model is developed by considering the functional performance of urban open spaces for people with varied mobility capabilities in term of health, age and income level.

Accordingly; this research stresses the importance of using post-occupancy evaluation which obtains beneficial inputs on urban design guidelines regarding inclusive design policy. The POE model will be a guide to all planners and designers who are interested in the production of a built environment. It will be also useful for the design of inclusive environments for other disability groups, because it can be easily adapted to other alternative studies as well.

1.4 Research Hypothesis and Questions

As mentioned above, the study seeks to propose a post-occupancy evaluation model on inclusive access of urban space for users with a range of mobility capabilities in terms of health, age and income level. While inclusive access promotes the functionality of urban spaces; there is a mutual relationship between inclusive access and functional quality/performance.

The inclusive access can be established and sustained with the provision of functional quality and performance:



Implementing accessibility standards alone is not sufficient to provide inclusive access. The functional performance and quality of the designed environment should also be increased. Making an effective evaluation from the users' perspectives and reviewing the evaluation results while creating the design proposals delivers a long-term and successful design. Therefore; quality and performance measurements establish and sustain ongoing area improvement projects.

Utilization of post-occupancy evaluation in urban open spaces can offer more inclusive access for users. Since post-occupancy evaluation provides a more systematic measure, it assists to make a diagnosis about the inputs of inclusive design guidelines and enables design experts to determine the preferences and needs of users. **Accordingly; it can be hypothesized that inclusive access can be established and sustained with the provision of functional quality or performances of urban open spaces.**

In this research, the main aim is to examine how POE can be a tool to measure inclusive access in Kyrenia Town Centre? and the sub-questions rise as such;

- What is the relation between the functional performance measure and inclusive access?
- How could we measure the level of inclusion in urban open space?
- How could be inclusive access established and sustained in urban open space?

1.5 Limitations

Under the scope of this study, there are several limitations. These limitations are related to selection the of sample group, case study area and indicators of performance measure.

Although inclusive design is a philosophy that signifies a universal population. The main focus of the study is extended for people with a range of mobility capabilities including people with and without physical disabilities. Other types of disabilities were not included to the study. In the study, the term of 'people with physical disabilities' or `physically disabled` mainly use to refer mobility disadvantaged users of urban space, who are:

- People with wheelchairs or scooters
- People with walking deficiencies/devices as canes, crutches, mobility frames
- People with hand and arm deficiencies
- Pregnant women
- Parents with a puschair/double puschairs
- People with heavy luggage/load
- Elderly people
- Children under seven years old
- Other individuals who have a disability causing lack of mobility due to disease as arthritis, obesity, heart problems i.e.

The research is also limited by the evaluation of inclusive access in Kyrenia Town Centre (KTC). The study area lies between the Baldöken Car Parking and Atatürk Square which is the main commercial strip of the town centre. Almost all town centre users, including both local people and tourist users, have travel experiences about using this link.

This research is also limited by the selection of functional quality or performance indicators. The functional performance indicators were selected based on the inclusive access requirements of people with a range of mobility capabilities in terms of age, health and income level and all indicators were determined for measuring inclusive access in both physical and social environment.

1.6 Research Methodology

Post-Occupancy Evaluation was carried out for measuring inclusive access in Kyrenia Town Centre. The POE was structured within a systematic framework; preliminary diagnostic exploration, research design, data collection, data analysis and evaluation of results.

Preliminary diagnostic exploration involves initial content analysis with diverse literature reviews, administrative interviews and field surveys using photography and AutoCAD drawn site maps. The research design process includes the selection of suitable data collection and analysis methods. In the research design process, inventory forms were prepared and than they were used for a pilot study. Data collection includes a survey and observations which were performed to obtain data necessary to complete behavioural maps. The collected data with a survey was analyzed with frequency change statistics such as percentages, arithmetic averages, and standard deviations.

Statistical analysis was carried out for displaying interrelated correlations. Finally; data analysis results were evaluated by making comparisons between the findings and expected performance value.

In addition to these; the diagnostic POE was used instead of indicative or investigative POE, because, it has more sophisticated measurement techniques and the collected data from the representative samples was systematically analyzed. This diagnostic POE involves both quantitative and qualitative toolkits, a survey and systematic observations for behavioural mapping. Beyond only using the results of a survey, the observations of representative samples permit scrutiny of problematic features in urban open space.

Chapter 2

EVALUATION OF FUNCTIONAL QUALITY AND PERFORMANCES OF URBAN OPEN SPACES

In this chapter, a literature review has been given to explain quality and performance concepts and their significant dimensions. The importance of an evaluation of urban open spaces' quality and performances have been also discussed in this part of the research.

2.1 Quality and Performance Concepts

The following part of the chapter highlights two significant concepts; quality and performance.

2.1.1 Quality Concept

The evaluation helps designers and planners understanding ways of design and it also possibly leads to improve the quality of the built and natural environments (Windley and Mcclure, 2007, p.45). Quality is a multi-dimensional concept and its meaning can alter due to conditions and circumstances. In literature, different definitions of quality have been given by different disciplines. According to Crosby (1979), quality is a "conformance to requirements". Juran (1980) explains quality indicates "fitness for use". Another definition was stated by Deming (1986) quality as an expected value of uniformity and dependability, at low cost and fitted to the market. The later definition was given by Stasiowski and Burstein (1994), "conforming to described and

corresponds to requirements; suitable for the intended use; predictable in uniformity and dependability; work that will not need to be repeated (1994, p.44).

Individuals demand high quality goods and services at all times. The meaning and process of quality have undergone diverse changes. Since the concept of quality dates back to the 1920s, Shewhart developed the "Plan-Do-Check-Act" cycle as a scientific research method. This cycle offers high performance levels through continuous improvement and monitoring (Carr and Littmann, 1991; Gülersoy et. al, 2009).

The quality is a comparative expression that contains a series of factors, it is sometimes difficult to measure it. The quality of a space can be determined through both objective and subjective indicators. While objective indicators usually involve physical parameters as air pollution, noise, level of crime and suitability of space. Subjective indicators contain psychological and socio-cultural dimensions of the environment and the studies on human behaviour, well-being and user satisfaction could be carried out for an assessment of subjective indicators (Gülersoy et. al, 2009).

Design/redesign, conformance and performance are three types of quality that integral to the improvement of the comprehensive process. "The three types of quality, the relationships between quality and productivity, and the benefits of improving quality have to be understood for the quality management to achieve its purpose" (Carr and Littman, 1991; ed. in Gülersoy et. al, 2009, p.111).

On the other hand; the word of quality can be defined with diverse meaning which influences from an aesthetic, legal or functional point of view (Windley and McClure,

2007). The functional quality measure is not easy, but the existence of some tools as direct measure on quality performance makes such measurement possible.

2.1.2 Performance Concept

From the built environment point of view; the performance evaluation is the most necessary step for the improvement of people-centred or inclusive design projects and "poor implementation coupled to a lack of performance evaluation of any improvements made, could lead to a deeper sense of cynicism and subsequent political exclusion amongst the very people that the legislation was intended to help" (Bartuska, 1994).

Performance has an impact on the spatial satisfaction of users and it can be described as a degree to which the product answers user's needs and these needs can be explained in terms of physical, psychological and social circumstances to perform actions that assist users to perform actions effectively (Lang,1994).

As mentioned by Aydın and Uysal (2009) the dimensions of performance to user-space interaction are researchable in each scale. The performance evaluation is beneficial to insight existing quality; to define positive alternations and to be guided on the determination of criteria regarding the reduction of negative progress in the new occurrences. All of these benefits surely denotes the prominence of performance assessment.

In any scale; architectural and environmental design performance is directly related to the quality of the physical environment. Environmental performance and quality are based on three elements of an environment; the first one is related to structural components of an environment; the second one concerns the people who produce and

consume of environment and the third one is linked to activities that are carrying out in it. The performance could be evaluated based on these three dimensions of an occupied environment and outcomes of that measure give us the degree of performance level presenting on the user satisfaction and quality of an environment (Aydın and Uysal, 2009).

In order to provide practical research in design, ought to be applied proper models as a useful tool for both researchers and designers. However; there is possibly a gulf between the researcher's abstract model and those which the designer can use. Some of the methods are interfacing between the theories of social researchers and the practicalities of designers or it can be stated that a significant gap exists against practical design solutions. Research-to –design interface solution is essential and the proper design should be provided between researchers theories and architects' implementations. Wehrli (1974, p.51-62, Karagenç, 2002, p.55) called this interface as a `performance concept` and the performance itself as a model 'one which cannot injury to any scientific or design model, but can only serve to make a symbiotic union between two'.

Performance concept generally intended in terms of fulfilling user needs and definition of desired quality of any material, component or a system. In any scale, the performance of the architectural and environmental design is directly related to the physical environment. Performance and quality of the environment can be measured over the components that constitute the environment; designers and users of the environment and existing behaviour setting (Sanoff, 1977; Aydın and Uysal, 2009).

The performance-based approach is a global trend. The performance concept in the building process regards buildings as a dynamic object, it entails a comprehensive attitude in evaluation. Performance measures are linked to performance criteria and dissimilarities are assisted as feed-forward into improvement for planning, programming, design and construction of future buildings, and the formation of databases or information clearing houses on building types, attributes and occupant groups. The performance evaluation and feedback concern user expectations and the necessary design criteria that is objectively and subjectively measurable in the environment (Malkoç, 2008).

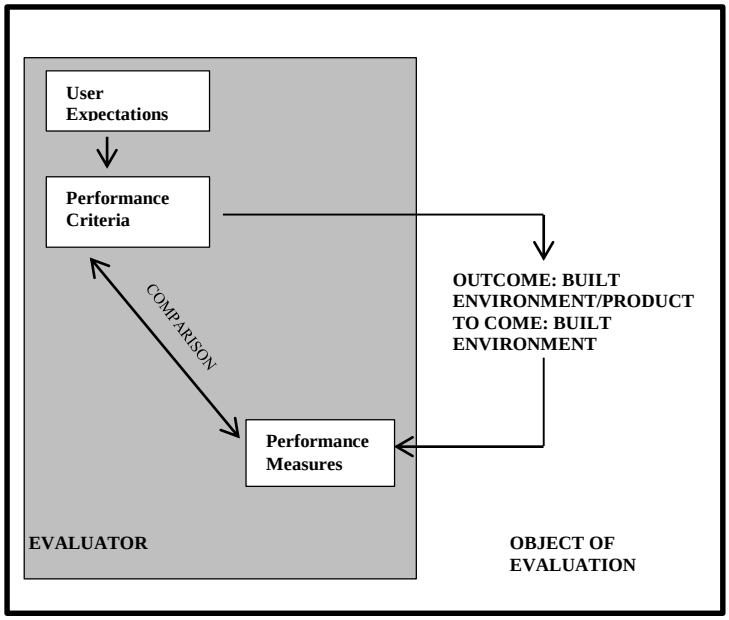


Figure 2.1: Performance concept (Modified from Preiser, 1988, Malkoç, 2008, p.15)

Law et al. (1996) advocate that occupational performance can be assumed as a dynamic and complex phenomenon, interpreted in spatial and temporal aspects and transactions between the person, environments and occupation in which the person engages. While the occupational performance could be objectively measured, its subjective attributes are more suitably measured by self-report.

The evaluation might be carried out with diverse goals and the research phenomenon should be systematically taken into consideration depending on the measurable criteria. During the evaluation process, the phenomenon also possesses its value system. In order to materialize evaluation, it is required to identify values and standards which constitute the basis of evaluation. The significant dimensions of performance measurements are comprised from;

i. **performance needs**
ii. **performance criteria**
iii. **performance evaluation techniques**
iv. **performance specifications**
v. **performance standards**
vi. **performance codes.**

The performance concept could be used to define implementations of relevant user's needs and the desired quality of a material, a component or a system. If the performance concept is completely studied; it can be stated that the concept is unified from a set of components which are shown in a hierarchical order (Figure 2.2), (Sanoff, 1977, p.111; Karagenç, 2002, p. 56).

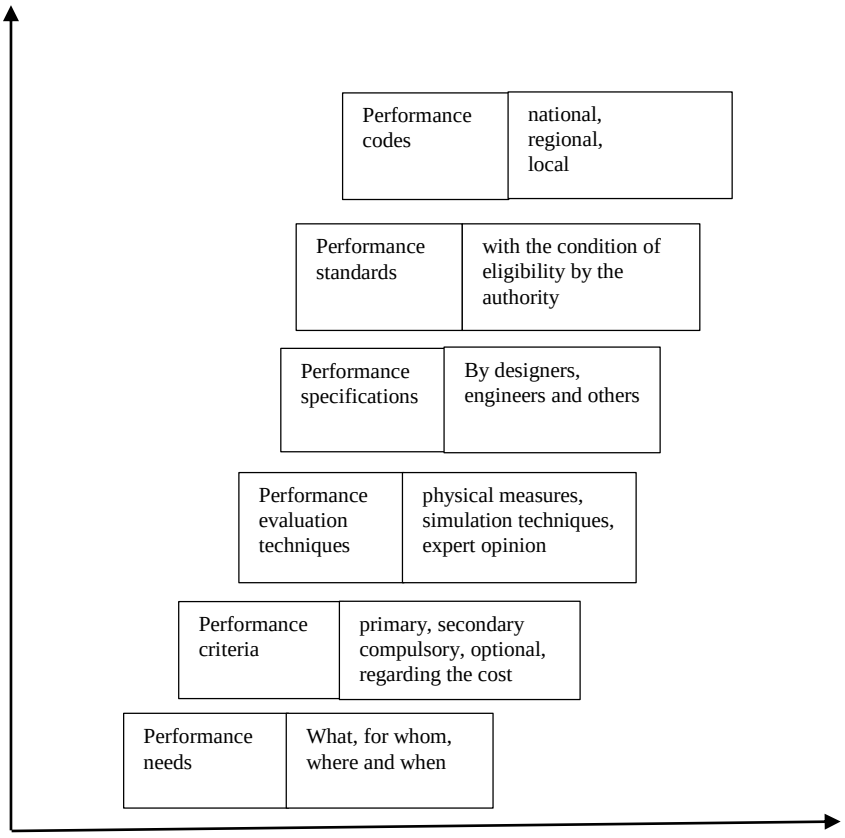


Figure 2.2: The performance hierarchy (Sanoff H. 1977, p.111; ed. in Karagenç, 2002, p. 56)

i. **Performance needs** might be changeable depend on the user's individual needs and they are related to physiologic (life process), psychologic (mental process) and social needs (interactions between a person and social groups and impacts of beliefs) (Karagenç,2002). Requirements do not depend on special materials, tools or systems, but may arise from the following questions during the evaluation process.

- What is the function or usage considered?
- Whose needs are at stake?
- Where needs arise or what is the limit or scope of needs?
- When needs arise and what is the limit?

Whereas; the users` expectations are influential in the formation of a man-made environment they have a critical role in the evaluation of man-made environment within the process of performance approach.

ii. **Performance criteria** involve qualities or features that are used in the evaluation. These criteria should be critically measured and assessed through suitable methods. The evaluation criteria have to be identified based on the current use of space and it refers to the original and intended use of space. In any specific measure; various performance criterion can be assessed together. The criteria used in the evaluation reflect the qualities that are desired in the built environment. The performance evaluation criteria should have some qualities such as;

- They should be known from the beginning.
- They must be easy and measurable.
- They would have meaningful character.
- They should be repetitional (Frame, 1993, p. 127-133, Karagenç, 2002, p.59).

The evaluation process can be included in the design phase through feedback and the evaluation criteria must be measurable or evaluable in order to make an evaluation with a number of criteria taken into account to check whether the environment is actually functioning.

iii. **Performance evaluation techniques:** After the criteria are defined, there is a need to develop an evaluation method for the evaluation of the final product,

which is referred to as performance evaluation techniques. According to Gür (1996, p.187), performance evaluation techniques should be determined following the conceptual definition and selection of suitable criteria in performance evaluation**.** A single evaluation technique may not suitable for any performance evaluation, the most probably a set of evaluation techniques entailed to determine in the basis of purposes and depth of an assessment.

iv. **Performance specifications** are statements on evaluation criteria and measurement techniques. The performance statements derived from user needs and includes three vital substatements and the fourth substatement could be added when or if necessary. These four statements include:

- Requirement
- Criterion
- Test
- Commentary.

The **requirement** defines some structural components or space attributes. They are in a qualitative form and contain normative attributes such as comfort, accessibility, safety, privacy. The **criterion** which indicates transferred form of the attributes through statements is a quantitative element. This **criterion** mainly denotes quantitative measures as how wide, how much, how much strength and how much illuminated. The statements then establish a procedure for **testing** the criterion. The **commentary** is an optional substatement and it delivers how the circumstances are explained; how the performance statement was studied or identified, references of interest, and also other background information to determine the performance

statement. In performance specifications, it is significant to consider performance dimensions with suitable criteria and techniques which will address evaluation. The performance evaluations could be applied in different dimensions as follows:

- **Structural/ Technical Performance** employs to measure the success and failures of structural elements and components due to their actions and functional performances. This kind of performance measure is particularly considered for building components like structure, material and installation. Accordingly, fire resistance, structure, hygiene, ventilation, heating, exterior walls, fine structure, roofs, thermal comfort, acoustic and lighting are among the important research topics of the structural performance measure (Karagenç, 2002, p.65).
- **Functional Performance** serves to investigate the influences of spatial and environmental organizations on user expectations and aspirations during the occupancy process. In this measure, the functional suitability of the environment is assessed based on the activities. The satisfaction level of users determines the functional performance level. The environment should serve both the quantitative and qualitative needs of its users and organizations. The elements of performance in functional performance measure involve:

– Human factor (anthropometric, sensational, perceptual-cognitial, ergonomic)
– Storing
– Communication and workflow
– Flexibility and change.

In addition to these; staff and equipment accessibility, safety, car parking, the spatial capacity of the activities, communication, compatibility to desired equipment;

adaptation to periodic change is among the dimensions of functional performance measure (Karagenç, 2002).

- **Symbolic Performance** includes evaluation of the perceptual meaning of space by users that is no longer to make any quantitative measure and it is just based on the subjective evaluation of the environment in terms of obtained symbolic meanning from the man-made environment (Karagenç, 2002).
- **Economic Performance** provides to determine the effectiveness of the resources and evaluates the degree and sufficiency of consumed resources.
- **Behavioural Performance** evaluates psychological and social aspects of user satisfaction and well-being. The proximity and territory; privacy and contact; environmental perception; image and meaning; environmental comprehension and orientation are essential elements of behavioural performance dimension (Cooper et al.,1991).

In addition to these; Aydın and Uysal (2009) stated that visual impacts of structural elements on user feeling, appearance of the equipment, spatial order are among the components of an **aesthetic performance** which could be assumed as elements of behavioral performance in terms of meaning and perception.

v. **Performance standards** is the "basis for comparing performance against requirements, usually expressed as 100% conformance or zero defects". The performance standard has to be defined for cost, schedule considerations and output specifications (Stasiowski and Burstein, 1994,p.361).

vi. **Performance codes** contain entire specifications and standards which are strengthened by administrative rules and laws. The performance codes are proclaimed across the national model code groups, regional and local authorities. They are designed and applied for the protection of safety, health and prosperity of the public (Karagenç, 2002).

The recent studies on architectural or urban quality were extended with performance researches. Both of the research concepts were used together. Whereas, the quality of a product indicates the level of its performance; the performance of a product simultaneously shows its quality level as well.

2.2 Evaluation of Functional Quality and Performances of Urban Open Spaces

The estimated statistical numbers denote that by the year 2025 half of the global population, expected at some three billion people, will be living in cities (UNCHS, 1996). Accordingly; the city and urban open space will become extremely important in the daily lives of people across the world. The quality of urban open space will have an impact on a wide range of elements of daily life including housing, education, health, crime, employment and leisure, both for individuals and communities or the population as a whole.

The evaluation of environmental quality or performance and intention of better design solutions are not easy processes. Because, the objective qualities of the same place might be changed in terms of user's personal characteristics as age, gender, education level, social status within society, past experiences and expectations (Gülersoy et. al, 2009).

The quality and performance measurements sustain ongoing improvements for design projects. There is a level of life quality that people who live in urban space expect from the environment. the environmental quality is perceived and evaluated by people as an important component of life quality. Life quality is addressed from general to private from the point of view of people using urban space as in Figure 2.3 (Temurlenk 1997; cited in Malkoç, 2008).

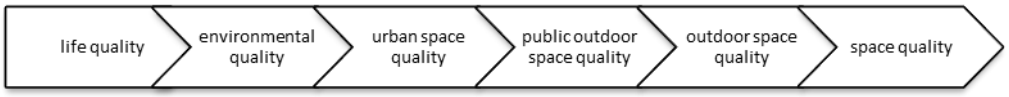


Figure 2.3: Different aspects of life quality

In order to provide space quality, the priority should be given user's needs and expectations and it should be recognized that the basic requirements are universal, but that the order of importance and levels of realization may vary from culture to culture (Atabek, 2002; Malkoç, 2008).

2.2.1 Urban Centres, Urban Open Spaces and Desirable Qualities

Urban Centres are areas for people and sites of opportunity which invite visitors from all walks of life. Experiencing urban centres provide a chance for inspiration and presenting a wealth of sensual difference. Although the urban centres attract all people to gain walking experiences in their urban open spaces, they may not be available or belonging to everyone. From this point of view; urban open spaces could be defined through their legal ownership and boundaries but the perception of who owns a space is also significant. Inclusion and exclusion can be experienced by the people in terms of the perception of feelings while using open space (Wooley, 2003).

The existence of people, activities and actions in urban centres are significant signs of lively and sociable urban open spaces. Urban centres hence should have diversity and heterogeneity in uses and users. They are not just planned as a place for promenading, shopping or dining. People are used various parts of urban centres for diverse reasons. Because; it is the centre of employment, the home for many families, students, couples, singles and senior citizens.

Urban open spaces in the city centre might be used for various purposes as residing, socializing, leisure, everyday and special shopping, lingering, promenading, celebration, protest and survival. User groups of urban open spaces could be classified as permanent; temporary (experimental) and coincidental (random) user groups.

- **Permanent user group** entirely possesses common living objectives, close face-to-face interactions, cooperation to a certain degree and shared production. These user groups mainly include residents (Gür, 1996).
- **Temporary (experimental) user group** is composed of any specific community cluster which has a symbolic link based on the duty. The group is consist of individuals who have common production experience. This group might involve people as an employer, staff, student, instructors, etc. who use streets for their jobs (Gür, 1996).
- **Coincidental (random) user group** is a community group that include individuals who coincidentally come together in the same place. These group might use urban spaces for different purposes such as; to reach information about direction, to entertainment and relaxation for pleasure, to journey and shopping (Gür, 1996).

Urban open spaces have a significant role in the routines of people who lives in a city centre. Therefore; they should be accessible and responsive to all users needs. Since open spaces are accessible, they are open (Lynch, 1981). Perhaps it is the most obvious way to define urban open spaces "open" or "closed" may be to classify between "accessible" and "inaccessible" open space (Lynch, 1981).

On the other hand, urban open spaces may be owned publicly or privately and those spaces are mainly shared by people who are not relatives, friends or works associates. They are spaces for politics, religion, commerce and recreation. The character of urban open spaces expresses conditions of our public life and civic culture in everyday discourse (Madanipour 1996, p.146; Walzer, 1986). These spaces contribute greatly to a person`s quality of life by serving for various activities them.

The quality of urban open spaces depends on their both functional and physical characteristics which have influences on human behaviour, experiences and well-being. Urban open spaces hence ought to be designed as human-friendly (Shan, 2014). The functional quality of urban spaces could be prompt by sustaining required design parameters and those parameters could be changed in terms of the prospect of a design.

In order to achieve the design of successful urban open spaces, desirable qualities have been determined by diverse scholars and organizations. Lynch (1981) identifies five performance dimensions that allow to the production of good spatial qualities. Vitality, sense, fit, access and control are five dimensions that sustain good city forms.

According to Project for Public Space (PPS); urban open spaces have to possess four key qualities; sociability, uses and activities, access and linkage, comfort and image.

Such qualities can be assumed as the main design attributes of successful public places. Accessibility criteria concern the places which are easy to get. The physical elements in space should be arranged for functionality and safety and then circulation becomes to be effortless. The comfort and image can be promoted through good maintenance, safety should be provided to attract most of the people to space. Users and activities should be attractive. Finally; they should foster sociability and interactions which will develop a sense of belonging to a community.

Integrality, accessibility, physical comfort and psychological comfort are four chief qualities that address what a good urban space should has. Integrality based on the walking distances and integration in a system that each function is tied together. Accessibility is the quality of being reach places in urban open space. People can access urban open spaces if they have high accessibility opportunities through comfortable walking environments; wide pedestrian ways, even pavement surfaces, safe crossing junctions and optional routes on the streets; ramps instead of steps for disabled users, ought to be placed (Shan, 2014).

The degree of physical comfort is linked to the suitability of urban space design in terms of micro-climatic conditions and relaxation activities. Landscaping is played a vital role in the regulation of the urban environment for such kind attributes. Besides physical comfort, psychological comfort is significant in humanized urban design. A sense of belonging should be fostered by increasing opportunities for social contact (Shan, 2014).

Successful urban spaces support safety and psychological comfort (Danisworo, 1989); and they must have high quality by their physical character, their easy access and clear

movement system (Danisworo, 1989; Carr, 1992; Rivlin, 1994; CABE and DETR, 2001; Gehl, 2002), connect the paths with strong linkages, to integrate transportation modes and land uses; possesses landmarks for orientation (CABE and DETR, 2001; Nasution and Zahrah,2012).

Meeting the needs of all users prompts the functional quality of urban open spaces. The provision of functionality in those spaces necessitates a more holistic approach and the following principles play a significant role in the development of urban open spaces.

- Understanding inclusive design practices
- Fostering community interactions and attachment
- Supporting a well-connected circulation network
- Sustaining a unique identity
- Providing safe and welcoming public realm to pedestrians and cyclist
- Providing an accessible public transport
- Cost-effective solutions in terms of construction and maintenance.

Gehl (1986) demonstrates the relationship between the quality of outdoor spaces and activities (Figure 2.4). The intensity of performing activities based on the quality of physical environment. Gehl classified activities into three categories: necessary, optional and social activities. Each of them necessitates different demands on the physical environment. Necessary activities involve more or less compulsory activities such as going to school or work, shopping, waiting for a bus or a person, etc. Optional activities include sitting, sunbathing, taking a walk to get fresh air. Social activities

contain children at play, greetings, various kind of communal activities, and mostly passive contacts that is simply seeing and hearing other people.

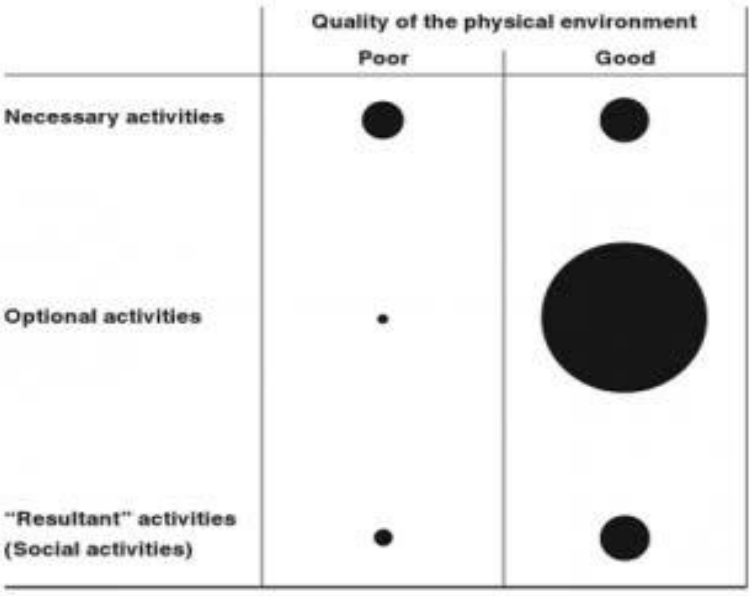


Figure 2.4: Types of activities in physical environment (Gehl, 1986)

The urban centre activities arise from well-designed urban open spaces that are extensively intended for a greater number of pedestrian uses**.** User density, land-use mixed, pedestrian-vehicular interaction, configuration and context are among the significant physical factors influencing usage of urban space and they should be taken into consideration during the design and planning processes. Besides; the increased flow of pedestrians contributes to higher levels of opportunities for shopping and business, which in turn means more profit for the city and the people (Imam, 1997).

The use of urban open space is an important dimension that leads to researchers measure the level of quality and performance. As noted by Whyte (1980) considering the uses of open space is an essential ingredient of urban space design. If an urban open space is empty or vandalized, space does not work. The non-use or misuse of any

open space indicates the requirement to design and extended debate on user involvement to management and redesign (Francis, 1985, p.89; Whyte, 1980).

A well-designed and managed urban open spaces refer to social benefits and opportunities for social contact and allow a wide range of activities. It is important to understand what kind of behaviour and activities exist in urban open space. The most commonly accepted unit for design purposes is “human need”. While the concept has relevant, it may not have emprical essence. The human need cannot be observed, but it can only infer its existence through observation of its emprical counterpart, behaviour. Human behaviour may be “more correct unit of analysis, it has characteristics, which are relevant, emprically verifiable and operationally definable” (Studer, 1969 quoted in Joardar, 1977; Mehta, 2013).

In order to sustain quality of public life, it is significant to provide suitably designed urban open spaces which embrace all human being by considering their entire physiologic and psychologic needs. Human needs models constitute the basis in architectural theory. The most common human need model was manifested by Abraham Maslow. In his motivation model, a hierarchy of basic human needs was demonstrated. According to the model, since human being’s needs met with some degree of certainty and satisfaction, they concentrate on the most basic needs and mostly such kind of needs are physiological that are entailed for the proper functioning of body and mind (Figure 2.5).

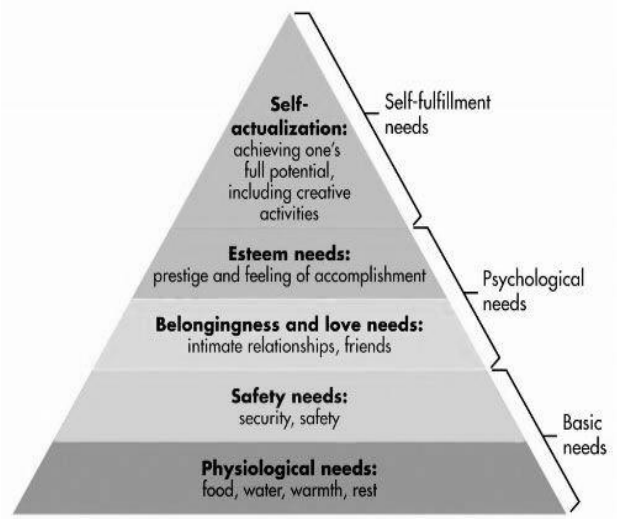


Figure 2.5: Maslow's hierarchy on human needs (Lawrence, 1987)

According to Francis (1985) there are five primary needs that people seek to satisfied in urban space; comfort, relaxation, passive engagement, active engagement and discovery. Lawrence (1987) describes user needs as physiologic needs; safety needs, love and self-esteem, respectiveness, self-actualization, perceptual capability and aesthetic needs. All those lists on human needs could be extended and might be varied in terms of the research perspective.

The evaluation of designed settings would reveal to define the human needs in a space. The evaluation of urban open spaces over users behaviour leads to identify human needs and expected performance criteria for the planning and design of urban centres.

2.2.2 The Need for Evaluation of Urban Open Spaces

As pointed out by Francis (1985, p.23) "a considerable advances in urban open space research and design practices occurred in the past decade." Urban open space research initially emerged from public awareness of the social failure of numerous urban open spaces and unused open spaces, vandalism and outdated facilities are among the

significant problems which were mainly observed in the evaluation of urban open spaces.

Advances in research have directly improved urban open space evaluation and redesign. The implementation of POE exactly influences the management and redesign of urban open spaces and such implemented works frequently a response to an observed problem, as lack of use, in an urban open space.

Since last four decades, action research approaches have been extremely used by researchers by borrowing methods from other traditional researches. The action research approaches provide direct and continuous feedback into policy, design and management of urban open spaces and they could be effectively applied to the design and programming of any urban open space. The utilisation of POE is the most influential way to explore research questions to users. Including users of a space as active research participants will bring efficient recommendations on the design and management process and can contribute the development of new design policies.

From this point of view, two different models on the development process of urban open space- the traditional model and evaluation/redesign model were demonstrated by Francis (1987). While the traditional model has pragmatic design solutions that finalize with maintenance and usage process. The design is never finished in Evaluation/Redesign Model and it is expected to make more as an ‘evaluation’ which provides a continuous feedback loop by questioning existing utilisation and then redesigning it (Figure 2.6 and 2.7).

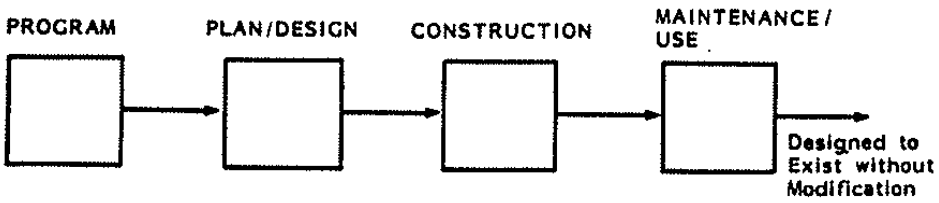


Figure 2.6:Traditional model of urban open space design and development (Francis, 1987, p.100)

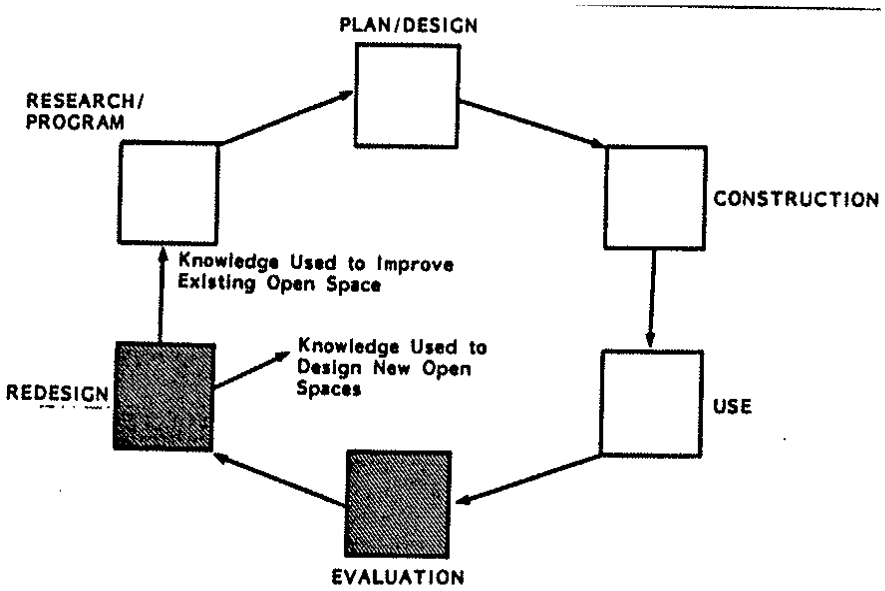


Figure 2.7: Evaluation/Redesign model of urban open space design and development (Francis, 1987, p.100)

The need for evaluation of architectural space has been also outlined by Preiser (2005) under the topic of the architectural planning process which involves series of steps for feeding forward and backward of the existing process. The process starts with preliminary studies on planning or strategic planning approaches and follows other stages:

- Programming
- Design
- Implementation
- Use

- Evaluation
- Re-use (Preiser 2005).

The **programming** consists of only small part of whole design and construction attempts and it is the most necessary step in pre-design progress that can be taken into consideration before design of the project for guiding in a total. In contemporary thought, professionals are generally questioned that "how can programing help the built environment be more responsive to the user's needs and the needs of the environment?" (Kumlin, 1995, p.6). The best explanation of a programming can be given as substructural data on problem definition and solving; organization and operating knowledge about design in the direction of users needs, desires and aspirations. Following the programming process; **design** is completed by considering proper solutions which are previously defined. Then; an appropriate project is **implemented.** Since, the programming plays an essential role in reducing problems during the occupancy and design processes, **evaluation** assists to reach successful programming, design, implementation and occupancy processes. The **evaluation** of designed and implemented built environments from the user's point of view is the process of POE.

As pointed out by Parshall (1987, p.192, Karagenç, 2002, p.57) "evaluating the final product is an important but often overlooked step". Since evaluation is an ongoing process, it inspects the past and benefits in the future. There are several reasons why an evaluation might be undertaken:

- To justify actions and expenditures
- To measure design quality (conformance to demands)

- To fine-tuning a facility
- To adjust a repetitive program or to prepare for a future building program, renovation and expansion.
- To research man-environment relationships.
- To test the application of new ideas.
- To educate past and future participants.

The success of evaluation depends on the cooperation that involves all participants- owners, users and architects- who agree on "what they hope to gain". "Organization of an evaluation (feedback) should correspond to the framework used for programming (feedforward). The resemblance of organization, content and format could increase the practicality of the POE results for programming and design in the future (Parshall, 1987, p.209).

As mentioned by Sanoff (1977, p.6, Karagenç, 2002, p.54), evaluation is a critical judgement that examines a set of variables and criteria. The evaluation makes an analysis and synthesis on the value of some standards and it also provides to make a comparison between these standards.

It is possible to evaluate for diverse issues. The evaluation paradigm could be taken into consideration as a self-value system. It might be determined based on the research objectives. The paradigm may possess different measurements on quality, beauty, safety, profit, performance. In addition to these; values and standards that generate the foundation of any evaluation should be identified and the measurement criterion has to be selected based on the intentions of an evaluation and expected results of a value.

Accordingly; the evaluated object could be mentioned together with performance and quality concepts which are essential and significant components of an evaluation (Karagenç, 2002).

The evaluation is about measuring the effectiveness of the built environment for its occupants. Hence, it can provide feedback to the designer about the impacts of physical environment on human behaviour. As clarified by Pena (1987) provision of feedback loop is crucial to increase the quality of a design product. The evaluation studies serve to numerous objectives:

- The suggestion of a conceptual framework to increase knowledge about human/space interaction
- Development of conceptual framework in environmental evaluation
- Provision of experimental knowledge on the design process
- Determination of data on behavioural requirements of occupants and space performance
- Investigation on utilisation of different spaces
- Assessment of environmental design productivity
- Arrangement of data sources for the development of standard methods on space evaluation
- Delivering programming conditions to future design, spatial and other performances
- Taking precautions against possible failures in the production of similar spaces
- Providing knowledge on the built environment production for architectural training programs.

It is possible to evaluate any course of a life-cycle. The evaluation is generally notioned as a piece of design and it can be conducted within two different ways:

- Evaluation of a design process
- Evaluation of an occupied environment (Atasoy A., 1973 , p:67 ed. in Karagenç, 2002, p:53).

The most common approach is to evaluate the quality and performance of an existing facility once that is an occupied environment –Post-Occupancy evaluation. In order to sustain a satisfying environment, evaluators should consider responses from facility users who are the best information source.

2.3 Summary of the Chapter

In this chapter of the thesis, the theoretical framework is outlined for the evaluation, quality and performance concepts. The importance of evaluation is highlighted for establishing and sustaining quality and performance in urban open spaces. Besides, the performance needs, performance criteria, performance evaluation techniques, performance specifications, performance standards and performance codes are discussed within the context of the performance concept.

It is not possible to understand the expectations of the users from the place without making a performance and quality evaluation. The evaluation of urban spaces is an important step for the provision of the performance and quality of city centres. Performance evaluation results provide an important input to the design and contribute to the realization of a project that includes user-oriented design criteria. In order for a good performance evaluation to be realized, the evaluation criteria must be carefully determined.

Creating a rigorous and systematic POE framework is dependent on the well-defined performance codes, performance standards, performance specifications and performance need together with performance criteria. The chapter was also emphasized on how effective performance measurement could be realized and then the valuable information was given to represent significant features that should be considered in the development of POE. Since the study will evaluate the functional performance of the urban open spaces for both disabled and non-disabled people, the concept of inclusive access and its significance will be discussed in the next chapter.

Chapter 3

ESTABLISHING AND SUSTAINING INCLUSIVE ACCESS OF DISABLED PEOPLE IN URBAN OPEN SPACES

In this chapter, the concept of disability, exclusion, accessibility and inclusion are discussed and then key dimensions of inclusive access are given. In the first section of the chapter, under the sub-topic of disability, the general and historical background of the disability paradigm are firstly explained by considering the background of two international organizations-UN and the European Council and North Cyprus' background is given as well. Following that the definition of disability concept is emphasized in terms of different disability models. In the second section; disability, accessibility and exclusion concepts are outlined within the nexus of built environment design. In the third section; following the explanations of social cohesion, inclusion and environmental justice concepts, key dimensions of inclusive access are discussed.

3.1 Disability

The design of urban open spaces has to be considered in terms of ways in which increase usability to certain social groups; such as those with disabilities, women and the elderly. In practice; narrow focus on disability and the needs of the disabled often mean that disabled provision is geared only needs of wheelchair users leading to the formation of inequitable environments. However; in order to provide inclusive access, a design philosophy that meets the needs of the broad spectrum of a society is needed.

Although inclusive access is an optimal design solution for the broad spectrum of a society, based on the main focus of research, the overcarching argument mainly includes the needs of the physically disabled person in urban open spaces.

3.1.1 General Background on Disability

Today, more than one billion people live with their disabilities in the World and these numbers correspond to 15% of the global population. In the statistical report of WHO (2001); it is specified that the disability rate is changeable in terms of poverty in countries. Because; the countries with low-income level are shown more dramatic numbers than developed ones (URL 1). The other further statistics are dedicating estimated disability numbers which will increase in the following years by the reason of old age and chronic illnesses as diabetes, heart and mental diseases. In this respect, within the growing awareness of those estimated numbers, most of the developed countries over the World have currently a tendency on promoting solutions for disability problem. Although the issue of disability is seen as a new paradigm, it has rich and extensive historical roots. Since recent decades, the issue of disability gain importance in the sense of promoting full integration, equality and freedom for all people and human right-based approaches became to popularize particularly by the contribution of international agencies.

3.1.2 A Brief Historical Background on Disability

Throughout history, disability theory has been defined in different perspectives within the context of the changing perceptions of disablement, in a broad sense, the issue of disablement has been transformed from an individual medical problem to a social problem.

Disabled people have been historically neglected by societies. Especially with the rise of industrial capitalism between the 18th and 19th centuries, they have not only defined as ill-treated but were also placed "outside of the capitalist mode of production, the engine which fuels social order". During those years, disabled people, hence, need to struggle for their identity and fight against their pariah status and the patronizing attitudes of the able-bodied people in their daily lives (Nelson, 2005).

The actions on disability initially began in the late 1970s and the main emphasis had given to barriers faced by injured war veterans and other disabled people. This lead to put forces on legislation and also disability acts, mainly in developed countries. After the Second World War; attitudes have been changed with the increasing number of disabled people, particularly in wealthy states like Britain, Europe and the United States of America. Those states had efforts to fit impaired people in to society. Community-based services were expanded by state and voluntary organizations. The main debate has emerged for the implementations against physical and social barriers through the concept of community-based rehabilition (Barnes, 2011).

For several decades, the United Nations and Council of European Union are campaigning to promote disability rights around the World and such councils give complementary duties to local and governmental agencies of World states in their written documents on disability.

- **United Nations` Background**

Since last decades, the General Assembly of the United Nation's began to promote human rights on social justice. It became to be proactive in promoting rights on disabled people. The great attention has been given to 'Equalisation of opportunities

for disabled people'. At the beginning of 1945's, different bodies of the United Nations focused on the right-based approach and they have developed strategies in their projects on disability prevention and rehabilitation.

During 1970s, the concept of human rights for persons with disabilities began to be internationally accepted. The first important document 'the Declaration on the Rights of Mentally Retarded Persons (No:2856)' is proclaimed by the general assembly of the UN, on 20 December 1971 (Polili, 2011).

In 1975, the major resolution which brought substantial effect for right-based approaches on disability, enacted under the title of the "Declaration on the Rights of Disabled Persons" (No:3447), as an addition to "Declaration on Human Rights". The document has been seen as a turning point, because it stressed the idea that "all persons with disabilities are entitled to the rights stipulated, without respect to race, colour, sex, language, religion, political or other opinions, national or social origin, state of wealth, birth or any other situation" (UN 1975 article 3, URL 2).

During 1980s, numerous efforts, either substantive and promotional, were nationally and internationally taken into consideration in order to improve the situation of persons with disabilities. The main goal included promoting the integration of people with disablities into society. Programmes were launched for focusing on rehabilitation and disability prevention. National committees representing 141 countries and territories were established to improve the following areas: social and economic condition of persons with disabilities, development and implementation of programmes, research, policy and decision-making, legislation, decentralization from the national to local levels, and assistance to developing countries.

The year of 1981 was designated as an international year by General Assembly. In 1982, the General Assembly adopted the World Programme of Action to create opportunities for the living conditions of people with disabilities as same as other citizens. Following ten years (1983-1992); decades of Disabled Persons was inaugurated and then a series of many initiatives took place as an announcement of the first and second Asian and Pacific Decade of Disabled Persons (1993-2002 and 2003-2012) and the African Decades of Disabled Person (2000-2009) and the Arab Decade of Disabled Persons (2003-2012) (Takamine, 2006; Barnes, 2011).

Through the Declaration on the Rights of Disabled Persons; the UN has been identified the meaning of disability as 'summarizes a great number of different functional limitations occurring in any population in any country of the world'. People may be disabled by their various impairments, medical conditions or mental illness which may be 'permanent or transitory in nature.' (URL 2).

A disability policy is now structured into three main areas: prevention, rehabilitation, and equalization of opportunities. The UN General Assembly has become to improve 'Standardization Rules on Equalization of Opportunities for Persons with Disabilities', in 48/96 annex, the main solutions have been defined by UN General Assembly in that annex. In the Convention of 20 December 1993, eight target areas have been highlighted and in target groups the accessibility is the rule 5 "with reference to the physical environment and information and communication services" (URL 2).

The World Conference on Human Rights held in Vienna (in 14-25 June 1993) and the Vienna Declaration and Program Action elaborated to determine the universality of human rights including disabled people. The significance of disabled people equality

and the objectives for their full participation was emphasized in the International Conference on Population and Development that held in Cairo, 1994. While, the importance of the full participation of disabled people to all aspects of social, economic, cultural life was outlined under the objectives of the conference, the necessity of conditions such as; to safeguard equality, to appreciate the capability of disabled people in the process of both social and economic development, to certified dignity and self-reliance were also highlighted.

The most remarkable stage on the human right-based development concerns disabled people was intended in the "Convention on the Rights of Persons with Disabilities", by the UN. The convention signed on 30 March 2007, but it became to be effective on 3 May 2008. That stage can be actually assumed as a turning point and serves as a major catalyst in the global program leading attitudes on disability issue towards social protections, viewing disabled as a full and equal member of society rather than objects of charity and medical treatment. The main objective of the convention is "to promote, protect, and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all" and it explicitly referred to the dimensions of sustainable development. Following its ratification on 23 December 2010, the Convention's text currently has 160 signatories and 168 parties, including 167 states and the European Union (UN, 2016).

- **Council of Europe's and European Union's Background**

The Council of European Communities initially focused on the action plan for rehabilitation of disabled workers in 1974. The first community action programme for the vocational rehabilitation of handicapped people launched as a Council Resolution

on 27 June 1974. In that plan, a handicapped person identified as “any limitation, congenital or acquired, of a person’s physical or mental ability which affects his daily activity and his work by reducing his social contribution, his employment prospects, his ability to use public services” (European Commission, 1996).

After the announcement of the International Year of Disabled Persons and the declaration of the World Programme Action, European Council started to give an effort on the disability issue. The initial recommendation was drawn for “Social Integration of Disabled People” at the level of the European Community in 1981 and the extended recommendation was approved under the title of “Employment of Disabled People in the Community” after five years. In the context of that recommendation, some measures have been taken into consideration in order to provide equal opportunity to member states in the basis of employment and in the supervising of the provision of barrier-free occupations (Gümüş, 2008).

Laws and policies have firstly defined against the socio-economic and attitutional barriers that carry the roots of exclusion of people with impairments. The first European Disabled People’s Parliament on 3 December 1993, enacted anti-discrimination legislation and other measures to ensure that ‘disabled people should be guaranteed equal opportunity through the elimination of all socially-determined barriers as physical, financial, social or psychological, which exclude or restrict full participation in society’ (European Commission, 1996).

The European Social Charter (1989) was one of the important document which was approved by the member states of the European Community. The charter take measures to encourage protection of disabled people:occupational and social

adaptation; work places and transportation facilities (Gümüş, 2008) . During 1996, the charter also advocated rights on disabled people in signatory states; regards to "independence, social integration and participation in the life of the community" and entailed those states to take measures to:

> promote their full integration and participation in the life of community, in particular through measures, including technical aids, aiming to overcome barriers to communication and mobility and enabling access to transport, housing, cultural activities and leisure (EC, 1996, Article 15).

The Amsterdam Treaty of 1999 emphasizes article 13 that presents significant development in the context of EU activity in the area of anti-discrimination law. The aim of which struggle with discrimination and realise the full participation of disabled people.

In 2000, the Framework Equal Treatment Directive (FETD) took measures against discrimination based on sex, racial and ethnic origin, religion or belief, disability, age, sexual orientation. The European Commission published "Towards a Barrier-free Europe for People with Disabilities"(COM/2000). Accordingly, all social, communication, architectural barriers have to remove with a comprehensive solution.

The European Community declared a European year for people with impairments in 2001 (2001/903/EC): "2003 as European Year of People with Disabilities". A European Action Plan was passed by Commission under the tittle of "Equal Opportunities for People with Disabilities" (COM/2003/650). The Comission's 2003 Action Plan was signed to increase efforts on integration and inclusion of disabled people with policies on employment, particularly in education and lifelong learning.

The second Conference of Ministers performed in Spain, 2003. In the conference; essential strategies were clarified to integrate policies for disabled people and states were requested to change their attitudes from; functional limitations to functional capacities, assessing disabilities to assessing abilities; the institution-based care setting to the life in the community; the medical model of service delivery to individual support; the care services to support services, the service-driven approach to the user-driver approach; the specialised measures to integrated measures; the rehabilitation to do empowerment of the individual; the compensation for individual impairments to the elimination of environmental obstacles; passive measures to replace income to active measures intended to foster participation. In the simplest form, the paradigm shift from the patient to the citizens (URL, 3).

In 2004, the Green Paper was published by the European Committee under the name of "a new strategy for Social Cohesion" and the paper was a revisioned form of "Equality and non-discrimination in an enlarged European Union" (CSDC, 2004). The Council focused on access to social rights on the basis of the following principles:

- Equality of rights for all, without discrimination
- Availability of quality services for all
- Giving special attention to the needs of vulnerable society members as the disabled, elderly and children
- Keeping away from the stigmatisation of those with special needs
- Provision of equitable and sustainable fiscal policies
- Participation of users (CSDC, 2004).

In the simplest form, the Committee aimed to improve access for all members of society to ultimate social rights in the direction of social cohesion strategy and it has duties on the development of intergovernmental activities in the field of social protection, social services, employment and housing. That strategy will raise social sustainability in the European Nations and it is being revised, re-examined. Its progress is also evaluated each year. A new measure will be included in next years' intergovernmental programme by the Committee (CSDC,2004).

- **North Cyprus' Background**

Although the last Population and Housing Unit Census was carried out in 2011, the number of disabled people is still undefined for this census. As stated by State Planning Organization, 4,597 people (permanent residence) are living with their disabilities in North Cyprus and 1,994 of this number is physically disabled people (State Planning Organization, 2011). In an interview with the head of the Department for Disabled People in 2017, it was claimed that the number of disabled people living in North Cyprus is around 6,000.

The documentary survey reveals that the first law on disability which is entitled in 'the protection and rehabilitation of disable people' (64/1993), was enacted in 1993. According to the law; 'disability is defined as the condition of being physically, mentally or emotionally handicapped' and by the use word of 'handicap', instead of 'disability', disability issue assumed as a problem regarding individual stand rather than emphasizing environmental factors. The regulation on necessary arrangements on improvements of disable rights has compliances on employment and social security of disabled person (Polili, 2012, p.66).

In North Cyprus; seven active civil society organizations are interested in disabled person rights. Turkish Cypriot Disability Rights Initiative was founded in 2010 with the contribution of "more than fifty volunteer associations, civil society organizations, political parties and individual members and this initiative plays a significant role in drawing attention to the rights of persons with disabilities by visiting public institutions and civil society organizations with the purpose of increasing awareness amongst people" (Polili, 2012, p.67). The main purpose of the initiative was improve the necessary framework to safeguard the equality of disabled people and provide full participation of disabled people in social life. In addition to this; the initiative has collected 4,000 signatures for the approval of the Convention on the Rights of Persons with Disabilities. The United Nations's Declaration of the Rights of Disabled Person (No:3447) was approved by North Cyprus's National Assembly and became part of the domestic law on 27 July 2010 (Tokay, 2011; Polili, 2012, p.67).

As mentioned by Polili (2012, p.73) "the constitution does not include a direct regulation about the accessibility right, Article 62 (2) of the Constitution includes the right to take part in cultural life". Besides; the Act of 57.(2) mentioned that

> the state shall secure the establishment of the institutions and organizations necessary for the education, rehabilitation, employment and social assistance of the mentally and physically handicapped persons in order to enable their adapting to the society (Polili, 2012, p.73).

In North Cyprus, there are also legislations concerns rights of accessibility such as Municipalities Law (51/1995), Town Planning Law (55/1989) and Streets and Buildings Regulations Law (Cap 96) concerns regulations on roads and real estates. The first law on the rights of accessibility has been amended in 2010, under the title of 'Ownership and Easement Rights in Apartments' and the main purpose of this law

is to provide accessibility for disabled people. According to this law; there is compliance on the construction of buildings after the approval of the flat owner's board. In the circumstances of any disapproval, 'the permission could be taken from the competent authority with the precondition of payments to be made by requesting party' (Article 44.2 35/2010, ed. in Polili, 2012, p.73). The other right on accessibility is related to the amendment of the Law and Regulations on Constructions in 2011, additional section has been taken in law that covers statements on pavement design to extend which should comply with international standards regarding the disabled person (Tokay, 2011, Polili, 2012).

The most positive progress on accessibility rights of the disabled person involves publishing of design manual on Disability Standards by the Chamber of Turkish Cypriot Architects in 2015 (UTCTEA,2015). In 2016, the manual was ratified by the Council of Ministers as an additional clause of the Streets and Building Regulations Law (Cap 96).

3.1.3 Definitions of Impairment, Disability and Handicapped

For last decades, the issue of disability has been defined under different concepts and among those concepts, the 'impaired', 'disabled' and 'handicap' are terms that are used extensively. However; there isn't any conciliation within the meaning of disability and in different conditions various concepts are used for common sense. The terms of 'disabled people' and 'people with disabilities' are prefered to be used for this study.

> Disability has been interpreted as a minority issue affecting a stereotypical consumer. The reality is that disability is an endemic to the human conditions. From the cradle to grave; we are all materially incapacitated by our surroundings in what are totally predictable and inevitable circumstances, whether as children, in pregnancy, as parents with children,

> in old age, or as a results of accident or illness, congenital defect or inherited characteristics (Foster, 1997, p.2).

Whatever the meaning of disable is comprehended as the people who have any kind of impairment, the term of disabled actually describes us the people who feel themselves as restricted by physical obstructions and these obstructions may prevent them to participate in society (Goldsmith 1997, Hashim et. al, 2011). Besides; Peter Tan, a Peer Counselor of Kuala Lumpur Independent Living Centre, mentioned that people are disabled by the reason of social prejudices and environmental barriers (Hashim et. al, 2011).

As cited by Çelik and Seyidoğlu (2010) cities contain different user groups. Disabled people are among those groups who "have lost their physical, mental, emotional and social abilities in various degrees congenitally or adventitiously" and they are not able to "adjust to normal life and need specific arrangements in buildings and outdoors in order to act independently" (Çelik and Seyioğlu, 2010, Bayraktar, 2006, Özdener, 2006).

On the other hand; World Health Organization (WHO) produced the definition of disablement that universally endorsed. In 1980, the International Classification of Impairments, Disability and Handicap (ICIDH) was published by WHO with the aim of providing uniformity and consistency in different countries. According to WHO, the concept of disablement involves threefold typology; 'impairment', 'disability' and 'handicap'.

- **Impairment:** any loss or abnormality of psychological, physiological or anatomical structure or function.
- **Disability:** any restriction or lack of ability resulting from an impairment to perform an activity in the manner or within the range considered normal for a human being.
- **Handicap:** a disadvantage for a given individual, resulting from an impairment or a disability that limits or prevents the fulfilment of a role that is normal depending on age, sex, social and cultural factors for that individual (WHO, 1980, p.27-9).

In addition to these definitions; WHO gives another concept as 'disadvantaged';

- **Disadvantaged:** A state of being where is difficult to perform the accepted and expected activities typically undertaken in society because of discrimination, differentiation, lack of equal opportunity, or simply because the social system does not facilitate the constrained behaviours of disadvantaged groups (WHO, 1980, p.29).

On the other hand, there is terminology confusion between the terms of disability and handicapped. Both concepts could be substitutely used and might be complicated during the daily life of people. The degree of such confusion can vary depending on the nations' world view and cultural values.

The definition of the term of a handicap is given by United Nations during the World Program of Action. As clarified by the UN, handicap is a function of the relationship between disabled people and the environment. The handicap occurs when they

disabled individuals encounter with cultural, physical or social barriers which impede their access to the numerous system of community that are open to other citizens (United Nations, 1982).

In contemporary European society, the recent concept of disability is formally apart people as handicapped from all others by granting legal or administrational privileges (Seeland et al., 2006, p.29). Handicapped refers to the condition of the opportunity loss or having any restriction in society, but it was entailed to be sensitive about providing the same rights for all people (Gümüş, 2008, p.28).

According to Murat (2007), there are some social factors that should be underlined in the definition of disability: need of care; workability; providing adaptation to the social life and accessibility and mobility.

From the accessibility point of view, disabled people could be defined as mobility limited people who encounter with diverse barriers while using built environment. Disabled people require suitable arrangement to gain access to urban open space against their mobility limitations. People might have experienced any kind of mobility limitation temporarily or permanently and/or several times during their life.

Many people can become disabled for sometime in a certain part of their life. A child, someone with a broken leg, parents using a baby stroller, an elderly person and others who are exposed to different forms of barriers during their daily lives. In this respect, the basic need is to promote solutions which include requirements of whole inhabitants. The professionals as architects, designers and planners must be aware of the requirements of people with varied mobility capabilities and the built environment

should be adapted for a wide range of users' needs (Uslu, 2008; Barış and Uslu, 2009). Therefore; it should be kept in mind that the mobilitisation of people can be improved with the arrangements that are suitable to multiple forms of a disability. As cited by Hanson (2004, p.9) "the multiple disability is a far more challenging issue for urban design than that of making towns and cities more accessible for people with reduced mobility, as requires a more complete understanding of the circumstances under which environments as disabling".

In urban open spaces, the mobility capability of disabled people could be enhanced by providing accessibility based on the environment-person fit design model which provides suitable arrangements for a broader range of capabilities. In the following section of the thesis, different disability models will be given.

3.1.4 Definition of Disability Concept in Different Models/Approaches

In the literature; the concept of disability has been explained under three different perspective. The first one is the traditional individualistic medical approach (medical model), the second one is the socio-politic approach (social model) and the third one is the combination of both individual and social factors (bio-psychosocial model).

- **Medical Model**

In its simplest form; this model considers disability issue as individual problem (Oliver, 1990, p.31, Bromley et. al, 2006, Hanson, 2011). The disabled people have been understood as "objects to be treated, improved and made 'normal'" and in order for the treatment of a disease and an illness 'medical' and 'rehabilitative' interferences may be suitable (Oliver and Barnes, 1998, Barnes,2011). The medical model segregates disabled people as 'abnormal outsiders" who are not enabled to cope with

the real world. Disabled people need continuous special care. Since, the medical model perceives disability as an illness; the care is the basic necessity for disabled welfare. Institutions like hospitals which apart disabled people from the society, are as containers (Ferguson, 1997, p.252, Gümüş, 2008, p.22, Barış and Uslu, 2009).

Industrial societies had adopted the medical-clinical view of disability for hundreds of years. Under this view disabled person was remarked as a sick, passive recipient of care, social incompetence, unproductive in a work. This model provided the basis for its contrast (social) model which resists these mentioned disability notions and definitions.

- **Social Model**

During 1980s, the social model has become to be more effective than the traditional perspective of disability (medical model), after the protests and activities which held on by activists and organisations. According to the social model, disability is a refusal of civil rights by the reasons of exclusionary practices in every aspect of society, from employment to design. This model segregates the meaning of impairment and disability. Whereas an 'impairment' caused by disease or injury, 'disability' caused by personal, social and environmental barriers. (Blackman et al. 2003, Oliver,1990).

The social model has seen disability as the problem including barriers which imposed by a society/environment. Environmental barriers, poor employment protection, inadequate civil rights, legislations and more may prevent disabled people to benefit from the same advantages as non-disabled people (Carmona et al., 1998).

In this model, disability is characterized by the notion of a complex social environment rather than the need of individual care. Certain problems are related to ‘social justice’ and ‘inclusion’ in the public realm. The disabling environmental factors constraint the integration of disabled people and such factors could be summarised as negative attitudes, limited physical access, limited acces to communication and /or resources, and to the rights and privileges of a social group.

Reyes et al. (2003) have demonstrated distinctions between two opposed disability models of disability. According to the medical model, the reason of disability is an impaired body, special solutions are then required to promote the built environment which creates accessibility problems and leads to produce segregation of disabled people from the mainstream society. On the contrary, the social model assumes that society produces barriers in disability and there is a need to design built environment for everyone and inclusive design should be considered as an integral part of the design process (Figure 3.1).

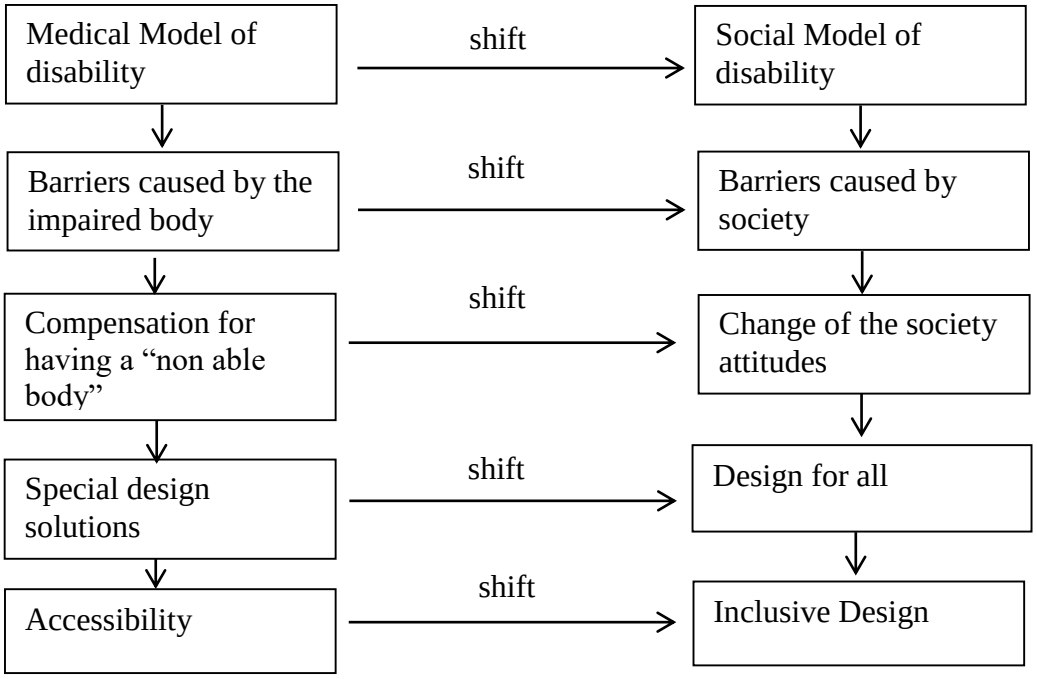


Figure 3.1: Interrelated concepts on medical and social models (Reyes et al. 2003, p.85)

The social model is a subject of universal rights. Instead of exclusionary practices, equal rights should be provided for minority user groups in all aspects of the environment. Therefore; the design of an accessible environment requires paying great attention to spatial concerns (Imrie, 1996, Davies, 1999, Gümüş, 2008).

- **Bio-psychosocial Model**

The International Classification of Functioning, Disability and Health (ICF) has emerged after the criticism on the ICIDH. As a result of the synthesis of social and medical models, in 2001, the ICF was initiated by WHO on the basis of classifying, measuring and treating 'biopsychosocial' conditions. According to ICF disability is "the interrelationships between body functions, activities and social participation while recognizing that the environment provides either barriers or facilitators" (Social Development Canada, cited in Nelson, 2005, p.5).

The ICF was developed after a seven-year effort involving 65 countries. Since 2001, it has been accepted by 191 countries ‘as the international standard to describe and measure health and disability` (Nelson, 2005). In the context of ICF’s classification, the health and functioning have been underlined rather than one’s disability and ICF classified three levels of human functioning. It seperates: body functions and structures: impairments, both ‘physical’ and ‘mental’; activities, participation and contextual factors which contains ‘environmental’ and ‘personal’ factors. Under this scheme both positive (facilitating) and negative (barriers) outcomes are visible that produce a great deal of potential categories for data collection (Figure 3.2), (Barnes, 2011).

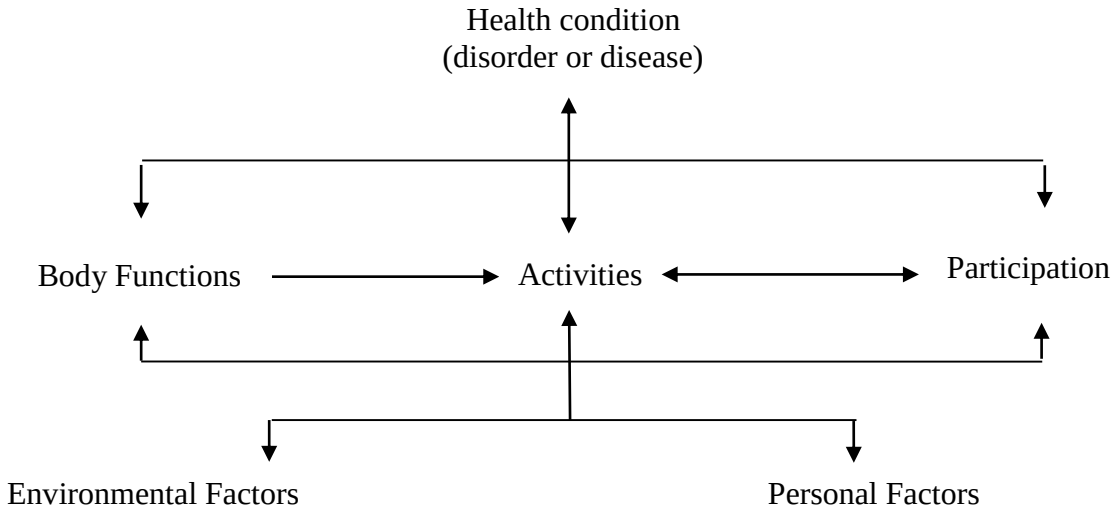


Figure 3.2: Interaction between the components of ICF (WHO, 2001, p.18; Barnes, 2011, p.65)

Activity refers to a task implementation according to a clinical assessment in a standardized environment, participation has a more social characteristics that require a balance between capacity and performance. Capacity and performance can vary in terms of personal ability to undertake a task or activity.

Barnes (2011) summarised the basic characteristics of three different models. While, the medical model ignores social factors of disability, the social model refers to refuse experiences of the impairment. The third model represents -Bio-psychosocial Model- mutual meaning of both medial and social models (Table 3.1).

Table 3.1: Comparison of the components of medical, social and bio-psychosocial models (modified from Barnes, 2011)

Medical	Social	Bio-psychosocial
medical tragedy theory	social oppression theory	bio-psychosocial theory
personal problem	social problem	personal/social problem
individual treatment	social action	individual /social action
Medicalisation	self-help	medical/self-help
professional dominance	individual/collective responsibility	collective responsibilities
Expertise	Experience	expert/lay experiences
individual identity	collective identity	individual/collective identity
Prejudice	Discrimination	prejudice/discrimination
Care	Rights	care combined with rights
Policy	Politics	political and policy change
individual adjustment	social change	individual adjustment and social change

In order to establish and sustain inclusive access, the disability model of ICF should be taken into consideration for the design of urban open spaces. In the context of the ICF's disability classification, the development of an environment-person fit design model by considering changing needs and different behaviour patterns would enhance the functionality of urban open spaces for people with a range of capabilities. In addition to this; using the developed design model for evaluation will also assist to make a diagnosis about the inputs of inclusive design guidelines and enables design professionals to increase urban space's performance level for disabled people.

3.1.5 Types of Disability

The numerous classifications of disability have been undertaken in terms of the type, onset, severity and duration of impairment. In the Convention on the Right of Person with Disability the classification of disability is simplified under four main groups.

- Physical Disabilities
- Mental Disabilities
- Intellectual Disabilities
- Sensory Disabilities (URL, 2).

These lists could be varied or extended based on the research focus. In this research, the main focus is given to people with physical disabilities who are people with assistive devices like wheelchairs, scooters, walking sticks, walking frame, cane; and other people experiencing mobility deficiency problems while using the environment such as pregnant women, elderly people; children under seven years old, people with pushchair/double pushchair, person with heavy luggage and also other stakeholders who have mobility constraints by the reason of illnesses. In order to sustain inclusion for the physically disabled person, it is significant to define their requirements seperately according to their capabilities and mobilisation.The following lines are intended to provide an overview on the reasons of disabled people's exclusion in urban open space.

3.2 Disability, Accessibility and Exclusion in Urban Open Space

Since last decades, the issue of disability has become to attract great attention in various disciplines. As mentioned by Gleeson (2001) there are a number of sub-streams of disability which contains; the phenomenology of disability that focuses on

everyday life experiences of people with impairments; the socio-spatial construction of divergence, the concentration of embodiment; the characteristics of service provision with the process of deinstitutionalisation and study of accessibility and mobility that extensively having an emphasis on the built environment of cities.

The disability paradigm has been extremely recorded about the built environment oppression for the last several decades (Hahn, 1986, Barnes, 1991, Imrie, 1996, 1997, Imrie and Kumar, 1998). The researchers also put an emphasis on how different dimensions of the built environment inhibit disabled people's movements by limiting their access to particular places (Hahn,1986, Golledge, 1993, Vujakovic and Mathews, 1994, Imrie and Kumar, 1998). In this study, there is a concentration on disability under the issue of urban open space accessibility and so the socio-spatialities of disability have been primarily highlighted on the basis of exclusion in urban open space.

Since 1970s, the physical accessibility is a well-established sub-stream of disability. Gleeson (1999, p.199) gives the definition of accessibility as "a profoundly important dimension of produced space which is sourced in the ensemble of political-economic and cultural dynamics that shape built environment". Accessibility problems have mainly focused on policy dilemmas and everyday mobility challenges faced by disabled people and built environment exclusion. The term of accessibility is extensively used to identify the inclusivity of disabled people (Gleeson, 2001).

As stated by Hahn (1986, Hanson, 2004, p.8) "the built environment is basically designed for the average human being, plus or minus half a standard deviation". From the perspective of a bell-shaped curve, person with many type of disabilities positioned

in the tails of this curve. While the needs of disabled are often overlooked in the creation of the built environment, they are implicitly excluded from mainstream society. Goldsmith (1997) produced the term of 'architectural disability' which describes how the physical design, layout and construction of buildings and places can confront people with hazards and barriers which make built environment 'inconvenient, uncomfortable or unsafe and may even prevent some people using it all'.

An accessible physical environment is necessary for independent living of disabled people. If urban open space is inaccessible for disabled people, segregegation takes form between mainstream and minority users groups. The broad literature agreed on the issue that accessibility problems extensively emerged by the missing knowledge and inattentive attitudes of the built environment professionals. They mostly have little awareness of disabled people's needs. Their improper designs attempts are imbued with numerous barriers which restrict or limited disable's access during their independent daily lives. That also impede choices of disables about their economic and social life (Imrie and Halls, 2001, Carmona et al., 2003, Hanson, 2004).

Due to the existence of physical accessibility problems, 'inaccessibility' and 'exclusion' define 'a city of enclosurement' and a social space are marked by institutional and physical barriers that seperate disabled people from the mainstream's life (Gleeson, 2001). "Exclusion can be experienced by an individual in society and is the result of an unique interplay between the dimensions and characteristics of exclusion specific to the circumstances of the individual" (Edwards, 2001, p.267).

The patterns of exclusion might be interchangable in terms of space and time and different sections of the population in different nations influence by such patterns. The exclusion might be occurred against diverse conditions of individuals like age, gender, race or disability. However; it could be briefly underlined that social exclusion stresses the "social multidimensionality of poverty". The multidimensionality refers some vulnerable groups which are "more disadvantaged in some national and local labour markets than others" (Allen, 1998, p.8, Edwards, 2001, p.267).

The problems on social divisions is not recently defined. It is just in a changing process and redefined as a "social exclusion" which simplicitly demonstrates social inequality. The European Comission has "linked the notion of social exclusion more closely with the idea of inadequate realisation of social rights". As pointed out by Edwards (2001) exclusion could be given as a marginalisation issue, greatly explores identification of 'inadequate social participation', 'lack of social integration' and 'lack of power' and 'insufficient access to resources'.

Saloojee (2001) noted on the different reasons that produce social exclusion:

- Being denied access to the valued goods and services in a society in terms of race, gender, religion, disability
- Lacking sufficient resources to be effective as a contributing member of society.
- Not being defined as full and equal participants in society.

The exclusion of disabled people can produce by three aspects of discrimination. The first one is related to the attitudes of society against a disabled person while he/she using a built environment. Such discrimination is defined as 'individual

discrimination'. The second one is an 'institutionalised discrimination' including the formal and informal rules that impacts on the disabled people's ability to the use of buildings. The third one is an 'architectural discrimination' that building treats its user discriminated (Goldsmith, 1997).

Barnes (2011) noted that institutional discrimination against disabled people is not obvious as much as difficulties by improperly designed built environment. The policies and programmes related to access provision generally revolve around voluntarism. Like Goldsmith (1997) and Barnes (2011), various researchers demonstrate the weak and marginal position of disabled people in a society. they have notions that disabled people have diverse difficulties that can be assumed as the evidences of marginalization and discrimination.

From the built environment point of view; the reasons of disabled discrimination involve:

- an ineffectual system of planning and building control
- designation of access officers at the goodwill position of the professionals rather than an obligatory mechanism
- societal attitudes labelling disabled people as a 'deserving poor' (Imrie and Wells, 1993).

Accessibility problems and disability exclusion could be measured in diverse fields. Creating an environment can begin from the following four basic areas:

- Inside the buildings
- Near the buildings

- In the streets and roads within the inhabited areas
- Open spaces and recreation areas (Church and Matonro, 2003, Solidere 2004, Barış and Uslu, 2009).

In the literature, there are numerous studies which focused on the theme of disability exclusion in urban open space. The common argument of these studies is that insufficient provision of an urban open space hinders full accessibility and participation of people in contemporary city life. The existence of physical and social barriers makes urban open spaces inaccessible to some people, the basic solution should be to remove barriers by expanding the accessibility of the physical environment (Imrie and Wells, 1993, Goldsmith,1997, Imrie, 1996, Hahn 2004, Meshur, 2014).

3.2.1 Physical and Social Barriers to Access Urban Open Spaces

Inequitable access is further than engineering or scientific problem, complex social issues are related to the design, construction and management in the use of the built environment. The existence of all physical and social (attitudinal and procedural) barriers in urban open spaces constraint people with disabilities to access urban open spaces.

Multiple barriers hinder disabled people to benefit from the environmental features. Kitchin (1998) exemplified some of the barriers that produce disablist urban space as; steps without ramps; inaccessible public transportation; the height of the cash machines; the car-designed city with changing retail; the location that reliant on disabled people public and authority transport and inaccessible toilets with their blocked entrances.

According to Imrie (1996) "urban planning is undescribed by 'design apartheid'" whereas planners, architects and building control officers are responsible in construction of those spaces which 'lock disabled people out' and 'prioritise the dominant values of the able-bodied community'. In the following lines, the main emphasis is given to the significant barriers that make urban open spaces inaccessible for disabled people.

- **Physical Barriers in Urban Open Spaces**

Physical barriers concern architectural barriers which are produced by improper design of the built environment like buildings, streets, sidewalks, etc. The urban open space evolved in the long stance and if its construction just fulfilled with the needs of homogeneity of individuals or majority's population, it possess numerous barriers for the minority group.

Architectural (physical) barriers continue to limit the freedom of movement and integration of people with disabilities (Poirier, Goguen and Leslie, 1988). Goldsmith (1997) suggested the term of 'architectural disability' which describes disadvantaged groups who are faced with barriers by the reasons of physical design, layout and construction of buildings. According to Goldsmith (1997, p.152) "architecturally disabled person is a person who, when using or seeking to use a space, is confronted by an impediment which would not have been their, had the architect who designed the building done". The term also defines that most of the built environment are not convenient, comfortable and safe for people with disabilities.

Çelik and Seyidoğlu (2010, p.3456) stated that "the functionality of urban outdoors enhances the quality of life and livability of the city" and the problem is not only

caused by social areas or being impaired, it is depending on the architectural and outdoor designs in their surroundings. If any mistake has been done in any process of city planning and an individual's accessibility is limited, it means the city losses its ergonomic nature (Çelik and Seyidoğlu, 2010, Kalaycı et al. 2006).

Environmental physical barriers that restrict the accessibility of people in urban open spaces have been classified by Ungar (2008, cited in Barış and Uslu, 2009, p. 803).

Order	Barriers
1	High kerbs and /or lack of dropped kerbs
2	Steeps gradients or ramps
3	Uneven paving slabs
4	Rough of cobbled surfaces
5	Slippery surfaces
6	Narrow pavements
7	Street furniture poorly placed, restricting access
8	Congested pavements
9	Steps without adjacent ramps
10	Dropped kerbs on roads not adjacent to each other
11	Difficult camber on pavement
12	Deep gutters along roadside, impeding crossing
13	Busy Roads
14	Lack of resting places on slopes or ramps
15	Handrails not provided on ramps
16	Insufficient designated road-crossing places
17	Drains near to dropped kerbs
18	Cars parked adjacent to dropped kerbs
19	Raised manhole covers at road-crossing points
20	Poor pathway maintenance leading to problems of foulling by dogs and litter

Figure 3.3: Physical barriers in urban open space (Ungar, 2008, cited in Barış and Uslu, 2009, p. 803)

In urban open spaces; the physical inaccessibility is related to both macro land use pattern and the micro-scaled features of urban design. Inaccessibility issue could be also generated through various aspects which involve:

- Physical barriers to movement for disabled people, including broken surfaces on thoroughfares (streets, guttering, paving) which reduce or annual the effectiveness of mobility aids
- Building architecture that excludes the entry of anyone unable to use stairs and hand-opened doors
- Public and private transport which are designed for non-impaired people
- Public information like signage that assumes common visual and aural ability.

Imrie and Kumar (2010) argue that the improper design of urban open space produces disabled people's marginal status in a society and the social anonymity and invisibility of disabled individuals exacerbated by either inaccessible land-use planning and impractical physical construction of the built environment.

Urban open spaces are also inaccessible if their use depends on private travel. The planning practices which stimulate automobile-oriented sprawl foster segregation by reducing mobility options for non-drivers and economically, physically and socially disadvantaged people, because they rely on public transport (Litman, 2006).

Unsuitable and inaccessible public transport system (both vehicles and transit stops) hinders and restricts disable people to access different places by limiting their mobility. The interruptions in a transportation network have a significant role in the discrimination of disabled people from mainstream society. The seamless travel is

critical to provide accessibility over transport chain and in that chain continuity of travel depends on the availability of accessible public toilet provision as well. Otherwise; travel of disabled people results failure (Hanson, 2004).

The urban open spaces are not produced in a naturalistic way, thus it is not possible to obligate processes of space creation which involves extensive socio-political procedure and value systems. Social inequity and exclusion also perpetuated by social barriers.

- **Social Barriers in Urban Open Spaces**

The exclusionary forms of institutional practices, attitudes of service providers and built environment professionals and cultural norms are among the restrictive features on the inclusion of disabled people in urban open spaces. Evcil (2010) argues that the accessibility problem could be emerged by diverse reasons as lack of legislations, regulations, public interest and the attitudes and knowledge of some architects.

The social barriers which constraints the uses of urban open space by disabled people, could be categorized under different sub-headings as follows:

i. Institutional/Procedural Barriers
    - Lack of legislations and regulations on access features
    - Discriminatory policies on the built environment design
    - The missing knowledge and attitudes of professionals
    - Lack of participatory planning actions

ii. Cultural Barriers
    - Societal attitudes by the reason of cultural norms on disability issue

iii. Economic Barriers

- Unaffordable prices of open space facilities.

i. Institutional/Procedural Barriers

Spatial restrictions on people with disabilities can take many forms, and place limitations upon social interaction in a variety of different ways. The spatiality of disability relates to the production of segregated spaces for people with disabilities. This has been embodied by the concept of institutionalization (Nelson, 2005, p.30).

Butler and Parr (1999) clarified that spatial exclusion can generate from the obvious segregated spaces creating by the institutions that try to protect and control disabled people and their interactions with the rest of society.

According Goldsmith (1997) institutional barriers are related to the rules that particularly bring negative effect on the utilisation of the environment by disabled people. The socio-institutional practices which are mostly held for ableist society produce inaccessibility problems for disabled users in urban open space. Those barriers are related to the absence of legislations and regulations on inclusive access; discriminatory design and planning policies; missing knowledge and attitudes of design professionals and lack of participatory planning actions.

According to Imrie (2000, p.203) the disablist nature of the urban design is also reinforced by socio-legal basis of the development process. Thus, one of the reasons of disabled people's weak position is the lack of legislation regarding the provision of accessible features for transportation facilities, built environment and other daily activities. Weak legislation provides to lessen notions on disability inclusion through

design provision. Imrie (2000) exemplified about legislations in the UK which have an effect on the service providers just implicated for minimal access features and those qualities only held for new buildings where ‘practicable and reasonable’, ‘while in existing buildings, anything other than substantial refurbishments are exempt from the regulations’ (Department of the Environment, 1992; ed. in Imrie, 2000, p.203).

Disabled people are confronted by an environment which is designed by architects, planners and designers who have limited disability awareness and little knowledge on disabled people needs. “Designing for the needs of disabled people has never been a significant feature of urban design theories and practices” (Imrie and Kumar, 2010, p.200).

Evcil (2010) stated that the attitudes of the built environment professionals like planners, architects, designers have to be concerned at the significant position that produced environmental barriers in urban open spaces. Because, the designers’ priority is beauty and aesthetics instead of the context of their work. As explained by Goldsmith (1997) architect’s priority should be on providing suitable projects for people. However; architects prefered to produce projects through two priorities. The first one includes producing aesthetically stunning projects and the second one is aimed to display their technical cleverness (Goldsmith, 1997).

Although, the local government has an important function in the access provision, a few local planning authorities have adopted access policies while fewer seem to insist that developers incorporate access into proposed design schemes. The local authority officer generally tends to comprehend disability as a medical rather than an environmental issue. This is the problematic reason that marginalized people with

disabilities. Imrie and Kumar (2010, p.359) further advocated that "disabled people are estranged in other ways too from influencing the form and content of the built environment. There is no public consultation over building control decisions although many access features decided by local authority building control departments" or local authority have access policies, it biased towards people who confined wheelchair.

As stated by Imrie (2010) architects, city planners and designers extensively ignored to listen disabled voice in their planning actions that's why their designs do not meet the needs of people with disabilities. The dimensions of a human body refer to denial body differences and diversity which is accepted as a physiological norm by architects and architectural students who tend to seek to design their projects for such dimensions. Beyond the acceptance of such universal standards, some of the architects or other professionals incorporate disabled people needs into their project. However, there is a tendency to focus on the needs of the wheelchair users. Lack of participatory design actions causes design professions' approach to be like this way.

Beyond the conceptions of professions, clients of the design projects are also insensitive to disabled people needs, due to the lack of participatory design actions. They usually have the notion that provides access features entail additional costs and applied to such features will not contribute to buildings value or marketability. Thus, building processes and products are mostly standardized to reduce costs leading to a range of fixtures and fittings similar in size and dimensions (Imrie, 2000).

ii. Cultural Barriers

"Society has been ambivalent about people with disabilities". Disabled people are recognized as individuals who needs medical care in their nurturing environment.

People with disabilities experience rejection and isolation from outside of their home. Hence, “over time, they begin to regard themselves as abnormal and internalize society’s homogeneous values and ideas of the norm” (Law, 1991, p.173).

In addition to political and economic factors, the disability produced by society’s negative reactions in tems of cultural aspects.

> The relationship between disability and society cannot be framed within either strict economic and political terms or purely socio-cultural processes, but must encompass a mixture of two. In a mixed production approach, disabled people are excluded not only because of capitalist mode of production, but also because of socially constructed modes of thought and expressions enshrined in cultural representations and cultural myths (Kitchin,1998, p.345).

Disabled people feel alienated in and strangers of urban open spaces, due to the reactions receiving from the mainstream society. (Imrie and Kumar, 2010). Furthermore, they often experience ‘inferiority’ in urban open space where they encounter the state of ‘avoidances, aversions and subtle seperations’ by society (Kumar and Imrie, 2010).

Butler and Bowlby (1997, p.411, ed. in Gümüş, 2008, p.39) cited that “concepts of and attitudes towards disability affect disabled people’s ability to move freely within urban open spaces”. Altering the physical environment is necessary to improved access to urban open space for disabled people but also is changing social environment, and in particular, changing social attitudes and behaviour towards disable people.

iii. Economic Barriers

After the industrial revolution, the urban open spaces were developed through the Fordist principles and capitalist state of institutional forms. The frantic pace of urban

economic development acknowledge consumption oriented practices that advocate for "who are contributing to the revenue stream are welcomed" while "who are different and .....not there to spend money are not welcomed, and in fact...excluded" (Turner, p.543; ed. in Nelson, 2005, p.32). The western World's capitalist accumulation as a recipe in the production of the urban open space that developers neglect the design needs of disabled people.

Oliver (1990, ed. in Kitchin 2010) argues that disabled people are socially excluded. Because; they are seen as unskilled and not producer, so they impede the progress of capital accumulation. A Marxist or political economy approach is one of the reasons of disability.

According to Gottdiener and Hutchison (2000) behaviour in urban open spaces influenced by the socio-economic status of people that is based on the income, education and occupation. While the disabled person is marked as an unskilled to work and unable to gain access for educational resources, they have low-income and probably unable to afford open space activities. The unaffordable activities restrict disabled people`s choices in urban open space and oblique them to stay at their homes.

Before the design of the inclusion model, the exclusionary model should be constructed for documenting complementary research on inclusive access. Therefore; the following scheme (Figure 3.4) summarises the barriers which restrict the physically disabled person to reach and use in urban open space. The scheme of barriers may differ in studies which address to evaluation of inclusive access in urban open spaces for other types of disability groups.

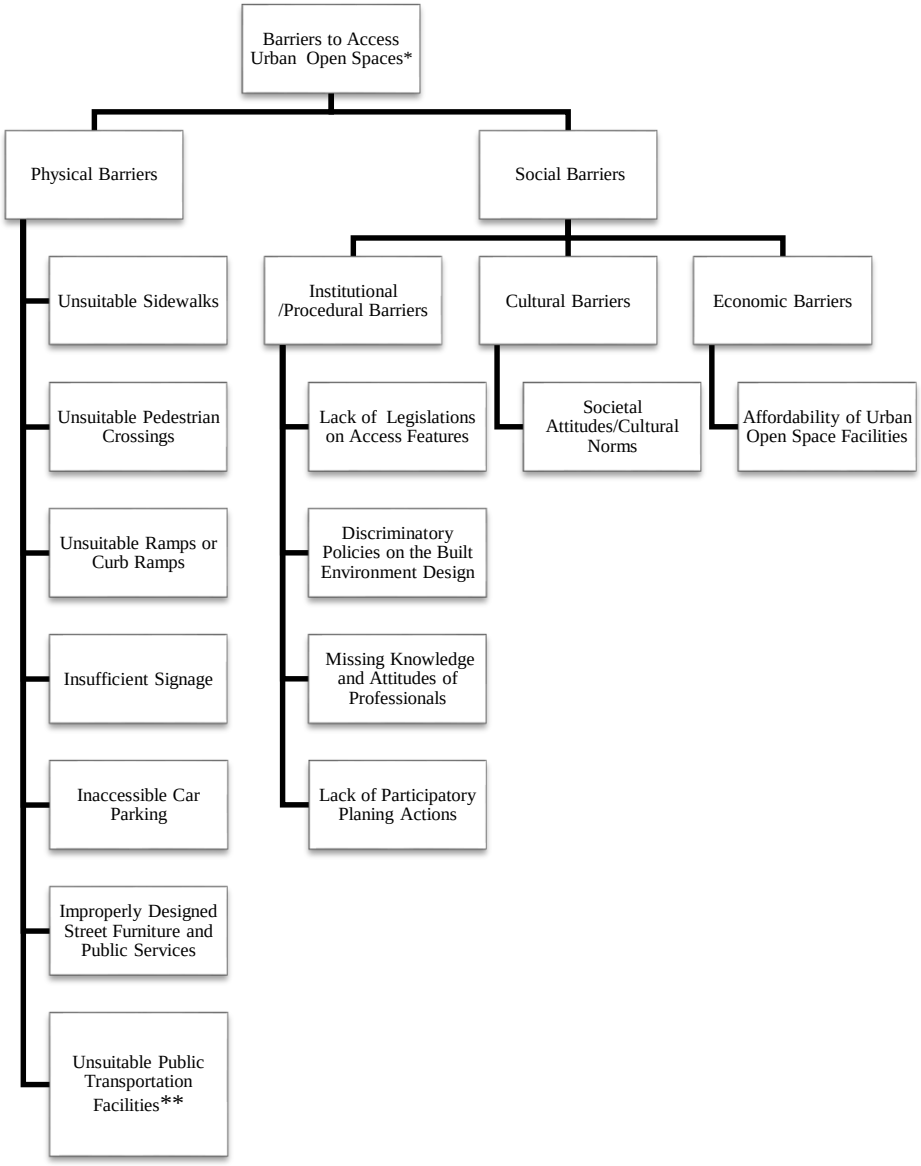


Figure 3.4: The scheme of barriers that restrict physically disabled person's access in urban open space (by author)

*This scheme can also be considered as the exclusionary model of inclusive access in urban open space.

** Macro-scaled features of urban design which must be taken into consideration in the evaluation of inclusive access.

3.3 Social Cohesion, Inclusion and Environmental Justice

The idea of social exclusion does not only describe the material deprivation of the poor or disadvantaged individuals, it also concerns powerlessness to fully exercise social, cultural and political rights as citizens. The material living standards and rights restrict the significant number of people and then social cohesion threatened. Social cohesion is a situation in the society that the citizens mostly respect the law, human rights and values, and a shared commitment to retain social order. “The capacity of a society to ensure the welfare of all its members, minimising disparities and avoiding polarisation. A cohesive society is a mutually supportive community of free individuals pursuing these common goals by democratic means” (EU Council, 2004).

It is not possible to find any fully cohesive society. Social cohesion is, indeed, an ideal strategy to take measure against social exclusion and poverty, it assists to create solidarity in society by minimising exclusion. Social Cohesion offers more than the position of being welfare, equal and non-discriminated in the society. It also refers dignity of each individual by giving freedom to every people to pursue their individual development during their life and offers participation opportunity to a person, being an active member of society (EU Commitee for Social Cohesion). If community accept responsibility for one another, society is cohesive (COM, 2004).

In Strategy Report, the European Council write on the various advantages of providing social cohesion in a community and the benefits of social cohesion have been highlighted as follows:

- Safeguard vulnerable groups at risk of social cohesion
- Contributes economic development

- Provides access to employment for all that is important within combating poverty and exclusion
- Assists to knit society together by encouraging participation
- Emphasizes the personal fulfillment by respecting the dignity and autonomy in both private and public sphere
- Fosters sense of community and belonging of shared social purposes in the vision of an extensive circle of solidarity.

The greater cohesion can be achieved by a more integrated approach that possesses local partnership through the involvement of numerous key actors like different levels of government, the social partners, non-governmental organisations, local communities and excluded group themselves. This is the crux of the matter that local partnership comprehends to offer the prospect of bringing together institutions and local communities to produce new alliances, strategies and policy innovation against social exclusion. While non-governmental organisations must play an active role in strengthening social cohesion. Government should support a favourable environment toward such organisations and assist them to promote bodies and activities in the direction of build social cohesion (EU Council, 2004).

Social inclusion and community cohesion could be improved by promoting accessibility that leads to bring economic opportunity, productivity and mirroring efficiencies of agglomeration. Whereas urban open spaces are produced for walking and social interactions, the community cohesion is obtained by rising positive interactions between people and these spaces foster a sense of community connections particularly among people who belong to dissimilar economic classes and social

conditions. With the purpose of increasing community cohesion, urban redevelopment schemes should be most preferable than suburban sprawl (Litman, 2006).

Density, diversity and democracy are significant issues that provide social cohesion. Conventional modernist planning approaches ought to ensure diversity with multi-functional development that supports variety in local facilities and uses (Prince, 2005). In order to provide social inclusion; community safety, accessibility, sustainability and quality of life should be essential concerns which be identified in the context of urban design agenda and the social inclusion goals can be achieved by establishing and sustaining strategies on planning regarding the provision of long-term accessibility and sustainable communities (City of Edinburgh Council, 2003; Evan, 2005).

Inclusive and accessible communities can be established and sustained by developing urban agenda that involve design solutions towards environmental justice and equity. Urban open spaces which are designed for accessibility, multi-functionality, equity, partiality and universality can offer more ideal city life. According to Young (1990), an ideal city life involves the following aspects:

- the merits of social differentiation without exclusion
- diversity in the use of urban spaces
- pleasure of novelty and excitement
- publicity in the sense of access to urban open spaces.

Besides; environmental justice refers to“fair treatment and meaningful involvement of all people regardless of race, colour, national origin, or income with respect to development, implementation and enforcement of environmental laws, regulations and policies” (EPA,2007). Taylor (2000, p.536) described it as a concept that “focus on

environmental obstacles, segregation and inequality in planning, policy formation and implementation that create discrimination between persons or groups from lower economic, political and social status".

In order to promote social justice in an urban open space, individual and group differences should be enthusiastically accepted. Thus, "barrier-free space, universal design, inclusive design are among the strategic concepts which assist the practical implementation of the environmental justice.

From the disability point of view, the cities should have reforms and innovations over a more accessible and inclusive design approach. Urban life has to offer extensive choices and opportunities for all citizens taking cultural, economic, political and social activities. There is an expectation that public and private organizations tackling for both physical and social barriers.

3.4 Establishing and Sustaining Inclusive Access of Disabled People in Urban Open Spaces

In order to provide more sustainable and healthy communities, cities should be inclusive to all layers of society and seek to "accomodate all individuals and enable them to satisfy their life needs without distinction between the elderly, children or the disabled" (Gümüş, 2008, p.43). The inclusive city and urban space hold "human particularity," which expresses "the plurality of moral subjects," plus the ambiguity, variability and specificity of people (Young, 1990, p.111). 'Accessibility, multi-functionality, equity, partiality and universality' are essential ideas and values that constitute the concept of an inclusive city (Prince M.J., 2008).

“Cities promote a diversity of social, cultural, and economic exchanges. The design of urban spaces as streets or squares determines both the diversity and efficiency with which these exchanges can be transacted” (Engwicht 1999; ed in Efroymson et al. 2009, p.3). Since urban open spaces offer many social, economic and cultural facilities, they should enable each person to reach contemporary urban life.

Inclusive environments perform better for all users and foster a sense of well-being in a public realm. Good access and design features make urban open spaces easier to use and more inclusive. Inclusive urban open spaces accept user differences and create to potential to achieve further on social justice and inclusion that commensurate social sustainability, which is a process of promoting well-being by designing successful places that meet user’s needs (Woodcraft et al., 2012).

The inclusive access is a chief quality that supports the needs of different behaviour patterns and it refers to the design, planning and management of change to cater for every people regardless of age, ability and circumstance. Satisfying inclusive access in urban open spaces requires a solution recovering maximal use (Goodall, 2010).

The inclusive access should not only be intended for the design of a new one, it would also include redevelopment, rehabilitation and refurbishment practices. In order to improve inclusive access, the built environment professionals need to understand:

- The extend and diversity of disability
- The lifestyle consequences of disability
- How disability affects a person’s use of the built environment (Goodall, 2010).

Modifying features of the built environment, is an ultimate to accomplish inclusive access and social inclusion, doubly provides to gain full benefits from concomitant reductions in the incidence and severity of the disability.

3.4.1 Key Dimensions for Establishing and Sustaining Inclusive Access in Urban Open Spaces

In order to reach long-term solutions via inclusive access, key dimensions should be identified within the framework of more comprehensive thinking. The following key dimensions help to remove both physical and social barriers by providing inclusive access in urban open spaces.

- Understanding inclusive/universal design approach
- Focusing on seamless travel
- Legislating for inclusion
- Providing a collaborative approach to inclusive design policies
- Raising public awareness about disability
- Ensuring the participation and involvement of disabled people in each process of urban open space design
- Implementation of environmental quality and performance measure toward disable people utilisation.

Figure 3.5: The seven key dimensions on establishing and sustaining inclusive access in urban open space.

The combination of seven key dimensions makes available functional quality and performance of urban open spaces for disabled people. In an urban design context; addressing environmental disability requires spatial applications with those dimensions which should be also considered during the provision of urban open spaces. The seven key dimensions will be discussed in the following headings.

- **Understanding Inclusive / Universal Design Approach**

Successful inclusive design projects support each individual's physical, social, cultural and economic needs by strong philosophies, strategies and tactics. 'Functionality', 'context sensitivity' and 'equitable impact' are significant design criteria that should be intended to design project from the outset. The `functionality` is based on the unique needs of every user; friendly, accessible and easy-to-use environments allow everyone to participate their daily lives. `Context sensitivity` involves a participatory approach

as a critical thinking and the community-based reference on potential solutions which provides a sense of place across the entire physical, social and economic spectrum. Successful projects can be achieved by giving `equitable impact` to the needs of each user, including vulnerable user groups of a community (Goltsman and Iacofano, 2007).

In 1950s, the roots of inclusive design founded on the solutions against the specialist design approaches which prefer to gain a pragmatic way of solving practical problems. In Europe, the United States and Japan, inclusive design approaches was introduced for removing obstacles in the built environment. However; special and segregated solutions which apart impaired people from the mainstream community, were mainly suggested in that period.

During 1970s, the attitudes began to change and transferred from the segregated and specialist solutions to the idea of normalisation and integration. The term of accessibility initially used for identified legal standards and the responsibilities of owners, designers and public agencies and also a codification of laws. In the USA, the disability rights act was performed for safeguarding minorities in the basis of 1964 Civil Rights Act and this act assisted into the emergence of initial notions on design as one of the way to provide civil rights. Following then, the Architectural Barriers Act in 1968 and the Americans with Disabilities Act (ADA) in 1990 were codified to identify inclusive design rules and standards.

Although the existence of regulations on accessibility, there was a missing link that protects to continuity of exclusion for some user groups. Because, accessible design requirements were extensively highlighted for mobility impaired people, especially

wheelchair users. In 1970's, Michel Bednar (an American Architect) advised that it was required to a new concept beyond accessibility which would be more universal and broader and this innovative idea was necessary for promoting every people's functional capacity (Fletcher, 2002, Reyes et al. 2003).

In the late 1980, a wheelchair user architect Ron Mace suggested the term of "universal (inclusive) design" for accessible design. The universal/inclusive design concept is distinct from accessibility, because its origins are founded on performance and social justice. The accessibility concept has only focused onto the requirement of people who have sensory and vision impairment or wheelchair user. However; universal/inclusive design refers to all users' needs and intended design solutions to provide non-segregated environments which allow every people to participate in facilities of contemporary life.

In the mid-1990's, the universal design concept was adopted for the built environment provision in the United States (Green R.J., 2011; Mace, 1941-1998; Story, Mueller, & Mace, 1998) and it was used to propose solutions that minimize requirement of specially adapted and segreated facilities (Bromley at al., 2006). At the same time, the seven key principles of universal design was produced by Mace and a group of architect. Universal design principles accepted as a norm to achieve greater social sustainability (Darcy, 2009, Rains, 2004).

Across the World, the term of universal design is also interchangeably used with "an inclusive design", "design-for-all", "lifespan design", "user needs design", "user-centred design", "real life design", "transgenerational design". Although the existence of cultural differences between the World countries, the main objectives of

universal/inclusive design approach are commonly identified for providing comfort, safety, integrity, sufficiency, independence, sustainability, participation, cultural adaptation, gender sensitivity and affordability (Dostoğlu et al., 2009).

As defined by Hashim and others (2011, p.57) "inclusive design is a process where products and environments function and serve the widest possible audience, irrespective of age or ability". It implies design attempts that support solutions regarding diversity in terms of age, ability and gender. Inclusive design serves two purposes; the one is related to meet the needs of consumers who have difficulty in using the built environment and the other involves to respond the demands of companies who want to extend their potential market.

The inclusive design is a complex process and it requires an user-centred approach in design that actively search to learn user's requirements. It has been also described as a 'social design'. Hanson (2004, p.21) cited that "the crux of social design is working with people, not for them this implies the (at least partial) surrender of the role of designer as expert in favour of a more participatory approach". According to Imrie and Hall (2001, p.20) "user's knowledge is potentially a key resource and the point is not to challenge the architectural or design skills of professionals perse, but to interlink them more effectively with the experiential knowledge of lay people".

In the simplest form, the differences between inclusive design and non-inclusive design approaches have been given in Table 3.2

Table 3.2: Inclusive and non-inclusive design (ed. in Hanson, 2004, adapted from Sommer, 1983, p.7 and Imrie and Hall, 2001, p.19)

Inclusive Design	**Non-inclusive Design**
Concern with meaning and context	Concern with style and ornament
Participatory	Non-participatory
Oriented to people	Oriented to organisations or institutions
User-centred design	Owner as exclusive client
Low cost	High cost
Bottom-up design approach	Top-down design approach
Democratic	Authoritarian
Seeking to change design attitudes	Conforming to prevailing attitudes to design
Use of appropriate technology	Use of high technology
Use of alternative models of the development process	Development process control by corporate interests
Heterogeneity	Homogeneity

When the inclusive design is compared with a non-inclusive design, numerous advantages and benefits of inclusive design have been recognized. Universal/inclusive design involves a process that exceeds minimum access codes and standards, to create environments which are comfortably usable by people from their childhood to the oldest years. Integrating main principles of universal design can improve livability and life quality of almost the entire population and the universal design could be extended from inclusive and non-discriminatory design of products, cars, architecture, urban environment, infrastructure, information technology and communications (Nassar, 2005).

The inclusive design approach has the potential to achieve, further on accessibility, social justice and inclusion. An inclusive design provides economic competitiveness in a business sector, while the estimated numbers indicate the population of older people in Europe will reach 100 million by 2030. Hence; disabled consumers will increasingly become to be a potential market segment. Accordingly; inclusive design

can be considered as a ‘win-win’ situation for all service providers (Imrie and Hall, 2000; Roe, 2001; Hanson, 2004).

On the other hand; the seven key principles of inclusive design are included:

- **Principle 1- Equitable Use :** “The design is an useful and marketable to people with diverse abilities” (Story, 2001, ed. in. Preiser, 2005). This principle includes a democratic solution that every people should have equal access to both architectural and urban environment as streets, sidewalks, public (and privately owned) buildings, hospitals, schools, community centres, transportation facilities, urban and national parks. The main aim of the principle is to “provide the same means of use for all users, identical whenever possible, equivalent when not”.
- **Principle 2- Flexibility in Use :** “The design accommodates a wide range of individual preferences and abilities”. The principle is about to provide planning for choice and adaptation. It is required to create a variety through mixed and complementary uses such as retail, recreation and entertainment.
- **Principle 3- Simple and Intuitive Use:** “Use of the design easy to understand, regardless of user’s experience, knowledge, language skills, or current concentration level.” This principle leads to make urban environments legible and attractive with spatial qualities.
- **Principle 4-Perceptible Information:** “The design communicates necessary information effectively to the user, regardless of their sensory abilities” (Preiser, 2005). This principle can be achieved by maximising “legibility” of essential information; differentiate design elements on the way to make the environment graspable.

- **Principle 5- Tolerance for Error: "**The design reduces hazards and adverse consequences of accidental or unintended actions". It is entailed to provide security and safety in the environment (Story, 2001). It could be accomplished with an arrangement of design elements to minimize hazards and errors. Accessibility in the built environment should be provisioned by eliminating hazardous elements, isolating/shielding and providing warnings on probable hazards and errors and the fail safe features.
- **Principle 6- Low Physical Effort:** The design could be efficiently and comfortably used with a minimum effort. The system performance criteria are required to "find ways to reduce expenditure of effort and to minimize repetitive actions at all scales of environment" (Story, 2001).
- **Principle 7: Size and Space for Approach and Use:** A suitable anthropometric measure that sustains more comfortable and effective use, should be considered during the design of a built environment. Ideal space should be provided regardless physical and sensorial abilities of users and the design should be intended according to different body size, posture or mobility.

These principles just assist to integrate the needs of extend users make a usable design. An actual design practice, however, necessitates more than usability. The economic, cultural, engineering, gender and environmental situation of design context must also be included into design processes and simultaneously added on the technical resolutions in order to provide comprehensive solutions to full accessibility (Nelson, 2005).

The successful inclusive design projects answer the physical, social, cultural and economic needs of disabled people by maintaining more accessible living environments. Inclusive design attempts necessitate comprehensive thinking together with other dimensions which will be given in following lines.

- **Focusing on Seamless Travel**

Community safety, accessibility and social inclusion are among the recent design conceptions that contextualize issues regarding the mobility of people. Evans (2009) mentioned that focusing on the whole journey environment is the best way to arrange accessibility and mobility in an urban environment. The fragmented planning and design policies produce an unreasonable effect on the built environment usage and create problems on safety, movement and travel choices of individuals.

As mentioned by Hanson (2004) from a design point of view, “holy grail” is a ‘seamless travel’ which enable all people to move effortlessly from their origin and destination points, between numerous modes of transport and from building to building and place to place in the urban environment. “Access to the city centre is conceptualised in terms of the ‘transport chain’. Transportation system and public toilets are identified as missing link in that chain.

According to Gant (1997) city centre accessibility should be identified in three significant premises that concerns continuity in mobility of user. The first one is related to accessibility with private transport (Gant, 1992; Gant, 1997). The second one includes travels taken on foot (National Consumer Council, 1988; Transport 2000, 1988; ed. in Gant, 1997, p.723). The last one is linked to travel with private or public

transport and complete begining and end of their journeys as pedestrians (European Commission of Ministers of Transport, 1990; ed. in Gant, 1997).

"Design" is an enabling matter for accessible, sustainable and inclusive urban open space that can enhance public realm by breaking physical and social barriers in transportation facilities and walking environments. Transportation infrastructure, vehicle design and intention of transit stops are key elements for establishing and sustaining all-inclusive urban open space. Strategies on the whole journey environment deliver long-term accessibility and social inclusion with the intention of a well-designed public realm that supports origin to destination journeys (Evans, 2009).

A full accessibility could be sustained with a contcentration on both tangible and intangible user's needs in mobility and transport system (Azmin-Fouladi, 2007). In practice, just application of standards do not improve accessibility, lean towards isolation of particular urban design elements. It is entailed to describe "how the user actually reached the destination itself or whether transport is integrated with service delivery, openning times". The access guidances hence include the arrangements to transportation facilities and an accessible urban environment have reasonable cost, reasonable time and easy movement (Evans, 2009, p.367).

In order to provide social inclusion in urban open space, it is necessary to develop long-term accessibility planning strategies. Good urban design can be improved with an inclusive journey environment which requires to the intention of design through key aspects as follows:

- To enhanced the quality of a public realm with the provision of facilities concerning both transportation interchanges and pedestrian environment.
- To reduced the perceptions about psychological barriers to accessibility by minimizing opportunities toward physical and social incivilities and risks.
- To minimized physical barriers to accessibility by increasing permeability of urban open space and creating pedestrian-friendly landscaping, properly designed street furniture and amenities as public toilets, seating, lighting, parking facilities (Azmin-Fouladi, 2007; Evans, 2009).

According to Atkins (2001, Hanson, 2004) an accessibility improvement necessitates beyond the patchy or piecemeal design of the public realm. The cohesive access provisions could be accomplished with public transportation planning. An actual meaning of transportation for most individuals "is their legs". Unfortunately, unlit bus stops, high cost public transportation services, unhelpful drivers are among the significant barriers that impede disabled people access to urban open space.

Accessible transportation concerns "all people benefit from it" and also "all of the links on a trip chain must be accessible for the total trip. If any link is missing or broken, it could be stated that transportation is not fully accessible (Atkins, 2001, Marshall, 2005). The missing link in the transport chain ought to be considered by urban designers. In order to sustain inclusive environments, all dimensions of public transportation should be enchanced through inclusive design approach and inclusive/universal design principles ought to be applied for public transportation's concepts, systems and modes as well.

The trip chain conceptual model has been demonstrated by Zaworski (2007, p.57) and twelve key modules have been highlighted in the model. Despite the several modules are not linked to infrastructure and vehicles, they are significant elements that ought to be arranged for an accessible trip. The process of trip chain model has been indicated in the figure below (Figure 3.6).

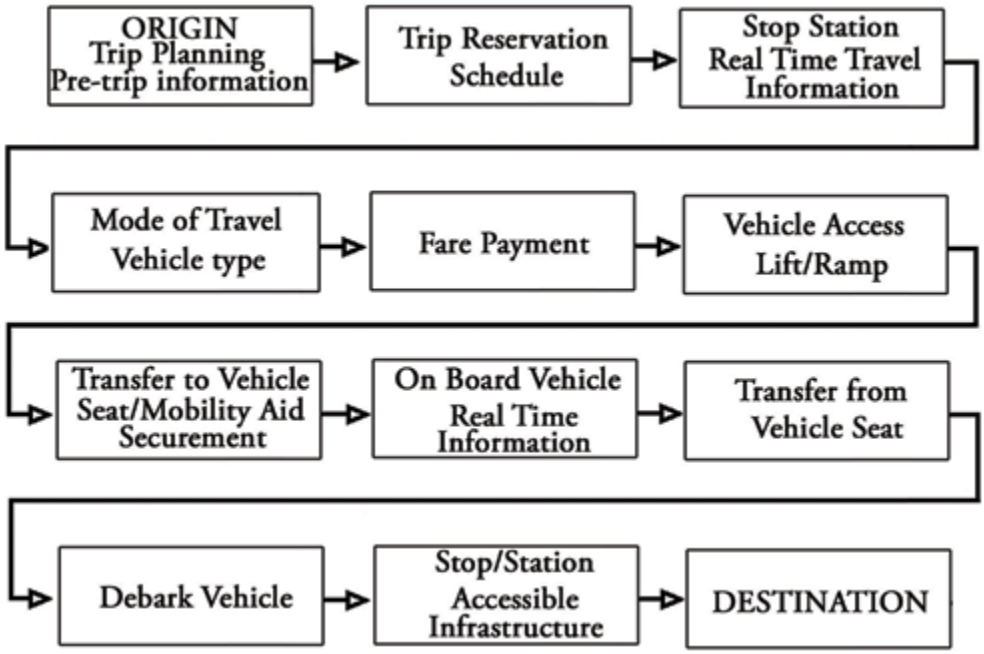


Figure 3.6: Trip chain conceptual model (Zaworski, 2007, p.57)

Accessible transportation has entirely important elements that should be taken into consideration for the city centre design. The accessible transportation elements include infrastructure, transport and information system. The infrastructure is a basic component of an accessible transportation system. The civil, mechanical or vehicle infrastructure have to be free of barriers. The infrastucture contains interfaces and transition zones such as terminals, stops, stations and the local zones around the transportation facilities.

Vehicle Design is also important for disability access and the ergonomic nature of vehicles have to be available for disabled people usage. Design elements of vehicles should provide safety for all passengers. Safe stair geometry, contrasting stair nosing and strategically placed stanchions, handrails and grab bars are among the critical elements that have to be taken into account for vehicle design and they should be suitably arranged to use of people who have a variety of abilities. The seat location is also significant for community safety. Forwardfacing or rear facing offers more secure seating for older people and the disable passengers and also they ought to be placed far from the operator. Handholds and stanchions have to be properly placed against the sudden accelerations and decelerations. The floor surface and texture should be slip-resistant against probable hazards.

On the other hand; the provision of suitable 'away from home toilets' is the missing link in the transport chain where most people are limited to just a few hours away from their home at a time. The absence of accessible public toilets in city centres fails many journeys of people with any impairments. Consequently, the public toilet provision is a significant issue that should be suitably designed for the use of all people. Most of the literature reveals that there is not any policy directed toward addressing accessibility issues. The convenient height of urinals, WC compartment and wash hand basins ought to be a concern for the use of every people. If on-street toilet facilities are accessible, disabled people's travel becomes to be seamless and more inclusive.

- **Legislating for Inclusion**

Legislations and regulations have to assist people with disabilities in taking societal duties regard to social and political skills and being advantaged to "play more concious

and assertive roles in the construction of their social environment". The legislation on disability inclusion must include the following parameters which give equal weight and welcomed disabled people's citizenship in terms of rights, responsibilities and access:

- Rights of belonging and access to justice; owning the process of mutual recognition and approval of our distinctiveness, uniqueness and differences both as individuals and groups.
- Responsibilities to respect and care for all; performed well-being of community; to provide health and strength of our communities, to engage in creating a vital society
- Access to the forums, institutions, associations, and public where citizens meet, discuss, share, work, contribute, play and socialize. (Philia - Canadian Dialogue on Citizenship, 2011).

In order to sustain inclusion of disabled people in urban open space, legislation should improve opportunities and choices on utilisation through inclusive access. Beyond partial legislations on rights to access on some sections of the environment; it is necessary to develop certain rules for all aspects of daily life. The rights on accessibility should be regulated by enacting proper laws in a holistic stance. Stronger anti-discrimination acts have to advance measures in order to promote full social integration, participation and overcome barriers to mobility and communications; enabling access to transport, housing, employment, education, cultural activities and leisure (Hanson, 2004, Goodall, 2010).

The design and implementation of urban open space should be developed and controlled in the direction of regulatory processes and laws. Existing rights on disability issue have to be reinforced under the Independent Living Movement. Legislations should recommend for the purpose of all-embracing civil rights by considering regulations on buildings, urban environment, public transportation, public toilets and other facilities (Goldsmith, 1997, Bromley et. al, 2006, Goodall, 2010). Particularly; regulations of transportation features and facilities will bring long-term benefits and also improved sustainability by reducing reliance on the car (Bromley et al, 2006).

The legislations have to be enacted by the government referring to official suggestions about the implementation of accessibility standards. The authorities have to take suitable steps to combat discrimination based on disability. The relevant legislation must be integrated into all kind of spatial interventions as newly constructed and upgraded areas. They have to be jointly issued by the related departments of health, environment, education, work and transport.

- **Providing a Collaborative Approach to Inclusive Design Policies**

A collaborative approach and coordinated policy can respond to problems on social exclusion. The implementation of strategies on the inclusive environment requires skills and resources of key actors such as public authorities, private sector-employers, voluntary organisations and community groups. These stakeholders should have mutual effort for combating social exclusion and they must develop their policies to environmental, social, economic aspects that influence the use of urban open space.

Inclusive design policies enable disabled people to participate in social, economic and civil public life. The partnership approach is necessary to promote and extend inclusion and public welfare. In this approach, each stakeholder have to identify their duties under the framework of inclusive design policies and programmes. The necessary and innovative policy mechanism of organisations will be separately explained in the following lines.

The public sector has important duties to promote an inclusive built environment. In order to reduce social exclusion, both of the local and governmental authorities have to take responsibilities. The government have to develop welfare reform agenda which should be defined through coherent solutions to reduce social exclusion. The government should give prominence to vulnerable user groups and their integration into urban initiative programmes. Accordingly; disabled individuals should become to be active citizens of the urban initiative programmes (Edwards, 2009).

Inclusive regeneration strategies should be attained to all deprived areas as employment, poor public services and the physical fabric of urban environment. The government should launch strategies which provide real choices and control toward disabled people inclusion. The government must also safeguard disabled people inclusion over and done with greater access to housing, education, trainning, employment, leisure, transport and mobility opportunities. Appropriate national strategies should be developed against discrimination and inequality. The disabled-friendly environment has to be ensured with ideal policies regarding accessibility and inclusion. Consequently, the government have to developed a statutory framework for access issues and ought to compel a developer for making reasonable provisions.

Local authorities are mainly responsible to think about the difference between citizens, so they have to design services and structures that are usable by all people. They have to improve opportunities for disadvantaged citizens during the provision of urban open spaces. The local authorities have to be challenger against social exclusion and they must promote social equality by producing a participatory mechanism that diverse actors, including disabled people, take place in the design processes of local services (Edwards, 2001; Varol et al, 2006).

The main objective of the local authorities must provide access to the built environment. The local authorities have to develop their access policies based on the legislative framework rather than expose voluntaristic nature and also they must enforce access provisions through active participation of disabled people to policy formation. The local authorities are responsible to devote necessary resources to access issues and planning for the disabled and they must provide direct investment rather then voluntaristic approach which is reluctant.

The local authorities should designate one of their staff as an access officer and encourage them to facilitate access groups. An access officer would act as a liasion officer and coordinator on questioning for inclusive access of disabled people (Imrie and Wells, 1993, p.217). The officer could take a role in the development of policy and design guidance by joining different departments together for the access provision.

Non-governmental organisations are especially charitable ones which should develop innovative solutions toward disability inclusion and they have to be as an initiator of the best inclusive access practices. Those organisations should work with

governmental organisations and they should act with them together to sustain better inclusive access strategies.

Institutions which are related to education and trainning of the built environment professionals must take responsibilities on the development of specialists skills. According to Goodall (2010, p.26) "educational and professional training initiatives will have a long-term beneficial effect on the inclusivity of the built environment". Since inclusive design and accessibility should be "compulsory part of all levels of education and trainning programmes of all occupations working on the built environment", institutions should mature professionals who have extensive knowledge of particular problems on exclusions and the ways of effective solutions towards inclusive access.

Representatives from different community groups should take a role in the development process of the built environment. They should become as active partners of all design and planning efforts. In the context of collaborative design efforts, people can feel themselves as self-confident while they are a taking role in decision-making process and also they will contribute to the project which is responsive to their needs and aspirations that leads to an increase their attachment to a designed setting (Sanoff, 2008). Participation and involvement of disabled people will be elaborately explained in the following lines of the study as well.

- **Raising Public Awareness about Disability**

Disabled people are subjected to both unnecessary positive attitudes and negative reactions and they are characterized as out of normal. While more positive attitudes of

the society influences initiatives toward inclusive access, negative ones may reasoned with discrimination.

Buttler and Bowlby (1997, p:411, ed. in Gümüş, 2008, p.39) stated that "changing the physical environment" will also exchange the social environment and "in particular changing social attitutes and behaviour towards disabled people". If the environment does not help to integrate disabled people daily urban life, a non-disabled person stands apart from the disabled person. If the environment has inclusive access, the segregation will be disappear. There is a reciprocal link between the physical and social environment that supports inclusive access mutually and this will also increase public awareness about disability. The raising public awareness about disability will foster sense of belonging of people with disabilities. Because, they can perceive their territorial position within the public realm.

- **Ensuring the Participation and Involvement of Disabled People in Each Process of Urban Open Space Design**

Modernist architects and planners ignored participation or involvement of the end-user. Citizen empowerment in the process of post-modern planning or post-industrial city became to gain importance. The post-modernist idea was indicated by the Richard Rogers under the principle on `people makes cities, but cities make citizens`and he explained this idea as follows:

> Active citizenship and vibrant urban life are essential components of a good city and civic identity. To restore these where they are lacking, citizens must be involved in the evolution of their cities. They must feel that public space is in their communal ownership and responsibility. From the modest back to the street to the grand civic square these space belong to the citizen and make up the totality of the public domain, public institution in its own right which like any other can enhance or frustrate our urban existence. The public

> domain is the theatre of an urban culture. It is where citizenship is enacted, it is the glue that can bind a urban society (Rogers, 1997, p.16; ed. in. Walters, 2007, p.79).

While the post-modernist actions influence the emergence of a new inclusion paradigm on disability, the design professions advocate on the significance of the participatory design actions and inclusion of a stronger disabled voice to the development of policy and plannning. According to these professions disabled people ought to be permitted and encouraged to play an active part in the all process of built environment provision.

Sanoff (2006, p.133) explained that "participatory design is an attitude about a force for change in the creation and management of environments for people. Its strength lies in being a movement that cuts across traditional professional boundaries and cultures". If citizens are active and involve in the environment's creation and management, "instead of being treated as passive consumers", it will works better (Sanoff, 2000, Sanoff, 2006, p.133).

The concept of participatory democracy initially emerged in the 1960`s as a new movement at the aim of involvement of community for identification of their physical environment and growth sense of responsibility in the direction of a new approach. Today, the participatory design methods are still in use and apply in the fields of urban design, planning and industrial and information technology. Paticipatory design works focus on the social, economic and environmental issues and they are extremely carried out for people who are often ignored and do not take part in any programme with respect to community development or design research processes (Sanoff, 2006).

Participatory design actions enable designers and planners to recognize human needs, values, and aspirations. These actions make more responsive environments and develop more democratic solutions against the dysfunctional environments which alineate users. The strategies of participatory design may differ based on the stages of a project. In order to achieve better design solution, participants ought to be involved into all processes of design and construction (Windley and McClure, 2007).The building a participatory democracy refers several benefits as increasing sense of community, citizen empowerment and raising a social capital (Guy, 2002, Windley and McClure, 2007). Several advantages of using participatory processes could be also given as such:

- The outcomes of participatory design researches reveal that the user satisfaction is high about the design projects, because users are among the stakeholders of the projects.
- Participatory design creates support for a project in the community.
- They are time-saver for design professionals in the long run projects, because the professionals can clearly understand what is possible (Windley and McClure, 2007, p.51).

Consequently, the implementation of participatory design strategies and techniques by design professionals mainly provides to reach win-win situation for clients, community groups, designers and users. Diverse World nations have enacted mandatory legislations on public participation and supports publicly funded pojects without allowing design consultants to practice in an isolation. Across participatory design actions, design professionals are able to adopt an inclusive design model for

developing better design proposals including solutions towards sustain cultural diversity and environmental justice (Windley and McClure, 2007, p.51).

- **Implementation of Environmental Quality and Performance Measure Toward Disabled People Utilisation**

Disabled people utilisation guidances and standards are not enough for sustaining continuous inclusion, in further it is necessary to evaluate existing features and facilities through the vision of disabled occupants. This is the most missing link of environmental design projects. Bartuska (2007) writes on the relationship between the implementation of a design project and the performance evaluations as "poor implementation coupled to a lack of performance evaluation of any improvements made, could lead to deeper sense of cynicism and subsequent political exclusion amongst the very people that the legislation was intended to help".

In order to promote inclusive access; the progress towards disabled people's equality in urban open spaces should be evaluated. The performance and quality of urban open space have to be measured through the benchmarks/criteria on inclusive access. Then, existing built environment must be altered within the value system that offers inclusive access to users. According to Goodall (2010, p.19) this is an operational performance system that serves to design performance and whole-life-cycle thinking have to start from the outset of the design stage, thus "post-occupancy evaluation will reveal any shortcomings".

3.5 Summary of the Chapter

For last four decades, new paradigm of disability has emerged and researchers began to investigate on the dynamic interplay of the person and environment, rather than individuals and environment alone. Under the vision of the new paradigm, the themes of accessibility and inclusive design came to be of renewed interest in urban design and planning studies. The common argument of these studies is that insufficient provision of an urban open space hinders full accessibility and participation of people in contemporary city life. The existence of physical and social barriers makes urban open spaces inaccessible to some people, and the basic solution should be to remove barriers by expanding accessibility and usability of the physical environment.

In this chapter, a great attention have been given to problem on environmental disability that was produced with the urban design solutions emphasizing homogeneity, non-participatory and top-down design approaches. The environmental disability create borders between the exclusion-inclusion or able-bodied-disabled people. `An inclusive access` is a key element of a discussion on disability. Addressing inclusive access is initially entailed to understand reasons of exclusion and the concept provides to ensure integrated approach to urban design rather than reactive provision.

In order for establishing and sustaining inclusive access in urban open spaces, some key dimensions (inclusive design, seamless travel, inclusive legislative framework and policies, public awareness on disability, participatory design practices, functional quality and performance measures) which were mentioned in this chapter, must be adopted for the development of a new urban design agenda.

The process of user involvement and participation is central to successful inclusive design. POE have to become accepted part of design by making objective evaluations based on obviously stated performance benchmarks/criteria. Design professions can use POE as a tool to diagnose the source of problems on inclusive access. In the following chapter; post-occupancy evaluation will be explored.

Chapter 4

POST-OCCUPANCY EVALUATION (POE)

This chapter of the research outlines a conceptual framework on Post-Occupancy Evaluation (POE). POE concept has been discussed in terms of its definition, historical background, development process, uses, benefits and obstacles.

4.1 Definition of Post-Occupancy Evaluation (POE)

Post-Occupancy Evaluation (POE) is a method of evaluating the performance of occupied settings. POE is a user-based evaluation approach and it is conducted after the completion of construction or redevelopment of a place (Beuthel and Dalton, 2010). Meir et al. (2009) define POE as a platform for a systematic study of occupied settings. While the lessons are learned through systematic evaluation, they will assist to determine the current situations of those settings and they also provide recognition of proper guide for designing future settings.

Literal meaning of the POE denotes to propose evaluation after people leave the building or it implies to emphasize assessing at a single point in the process. Diverse researchers and practitioners identified the term under different perspectives such as; 'environmental design evaluation' (Friedman, 1978); 'environmental audits or building-in-use assessment' (Visher, 1996); 'building evaluation and building performance evaluation (Baird et al., 1996). Even though the existence of diversity in the conceptual definition of POE, the term of post-occupancy evaluation persist to common for the historical reason (Zimring, 2001).

Zimring and Reizenstein (1980, ed. in Zimmerman and Martin, 2001) have identified POE as “examinations of the effectiveness” of occupied designed environments for the users. “Effectiveness” can include numerous ways that “physical and organizational factors enhance the achievement of personal and institutional goals” (Zimring and Reizenstein 1980, 429).

On the other hand; POE is different from other evaluations because it is used to measure building/space performance regarding the expectations of occupants in terms of ‘health, safety, security, functionality and efficiency, psychological comfort, aesthetic quality and satisfaction’. The main purposes of such evaluations are to collect, archive and share information about success and failures in occupancy processes, products and other building-related areas at the aim of enhancing the quality and life-cycle cost of future buildings (Federal Facilities Council, 2001, p:1).

As noted by Visher (2001) POE involves “any and all activities that originate out of an interest in learning how building performs once it is built, including if and how will it has meet expectations”. Architects and environmental designers are applied to POE in the purpose of learning about how environments are used by their occupants and to evaluate the degree of satisfaction on specific design objectives (Kirk et al, 1988 ed in. Malkoç et al, 2010).

RIBA Research Steering Group (1991, p.191) defines POE as “a systematic study of building in use to provide architects with information about the performance of designers and building owners and users guideline to achieve the best out of what they already have”. Preiser (1995, p.19) stated that POE as “a diagnostic tool and system

which allows facility managers to identify and evaluate critical aspects of building performance systematically".

Although the definition of POE usually refers to a building's performance, POE can also be applied to outdoor environments. The systematic evaluation of urban spaces can assist to determine problems for their quality and performances. Hence; it can be stated that POE is about an assessment of the delivery of a project and the performance of the design and procurement processes. In this sense, there is the latent to complicated POE with what is more commonly referred to as post-project review (Riley, 2013; Scottish Funding Council, 2007).

Despite, architectural critiques generally marks the evaluation of aesthetics, building systems or materials performance, POE usually concentrates on the evaluation of client satisfaction and functional fit in architectural or urban space. The criteria for judgement is mainly related to the implementation of the functional programmes and the occupant needs (Zimmerman and Martin, 2001). In addition, integrating user's needs and preferences into project during the design process, the POE method also leads to make the design process more scientific and research oriented.

An ideal design process must be cyclical in nature and incorporate feedback (Zeisel, 1981; Zimmerman and Martin, 2001). As pointed out by Zimmerman and Martin (2011,p.168) "POE was seen as a logical final step of a cyclical design process, whereby lessons learned from the occupants about the space in use could be used to both improve the fit of the existing space and be fed back into design research and programming of the next space". Without a feedback loop, each space possesses unpredictable outcomes. Since the last decade, the POE developed to be used as a

special assessment method and implemented by using diverse variables concerning task performance, privacy, communication, safety and thermal comfort. Such evaluations are completed as an individual or team on site, by carrying out on a quantified format which can range from a simple to complex inquiry of concerns (Cooper et al. 1991).

Apart from the other technical or environmental evaluations, POE directly helps to produce more responsive and functional spaces. It assists planners and designers to perform their duties about create the most suitable living environments which respond to all physical and psychological needs and expectations of users (Malkoç, 2008).

Özkan (2011) emphasized that POE is generally implemented for increasing the livability and usability of spaces. Therefore; user needs and demands should be well-defined before the application of measurement. Livability is related to perceived, measured and described performance value. Space livability and quality depends upon the demonstration of users' performance in terms of their spatial requirements.

In the simplest form, it can be stated that the POE assists to clarify certain problems, redefined needs and values of particular users and helps to advise environmentally sustainable solutions. When applying POE, professionals know how they can improve their knowledge by using people-centred and environmental assessment and they can easily challenge weak policies and develop new models of environmental intervention.

4.2 Historical Background and Development of POE

POE focuses on the reciprocal links between people and their environment as all environment and behaviour studies. There is a debate on the initial attempts about the POE in the literature. On the one hand; some scholars stated that its roots were based on the studies that were carried out for searching the impacts of heat and noise on the work performance during 1920s. On the other hand; the broad literature gives great attention that the POE studies had emerged after the return of the Veterans from World War II. In the following years of World War II, many scholars had an effort to be socially mature to find the way of getting understand and design of the built environment and so numerous POE studies were applied in various publications, academic programs presents graduate degree and associations, architectural and planning firms (Windley and McClure, 2007).

Based on the extended literature; Post-Occupancy Evaluation is, however, now approximately a hundred years old, it has acquired extensive experience in the field of environmental research. The broad bibliographic list with 700 POEs was starting with the date 1913 and it was published by the Department of Housing and Urban Development (HUD). There was only one source which used the term of 'Post-Occupancy Evaluation' in its title, the source involves examinations of military postal facilities by the AIA Research Corporation (Preiser and Nasar, 2008). Instead of the term of 'Post-occupancy Evaluation', other sources extensively used the terms "environmental analysis" or, in Britain, "building appraisal" for environmental design research. Besides, POE was initially applied to measure variables regarding sociometric, proximity, territoriality and privacy.

Since 1960's POE was attended by diverse social scientists, designers and planners. The first attempts in conducting POE were initially grew out of the evaluation settings such as mental hospitals and prisons during the mids of 1960's. Following years, POE surveys were generally applied to college dorms, offices, schools and residential institutions (Preiser, 1988). The most striking instances of that period belong to works including dormitory evaluations in the University of Berkeley, California (Van Der Ryen, 1967) and the University of Utah (Victor Hsia). The researchers undertook the evaluation of university dormitories without called post-occupancy evaluation. Such evaluations were assumed among the first systematic and seminal studies considering building performance from the building user's point of view.

From the late 1960's, the preliminary studies were conducted in the field of environmental psychology and POE was carried out for apprasing relationship between people and their physical environment. In Britain, POE began to gain a significant role with the first handbook of RIBA (1965). RIBA's main aim was to systematize the management of architectural practices, it hence possesses its final stage as Plan of Work: Part M, Feedback that suggessted architects should review on completed projects two or three years after final completion the "most effective way of improving service to future clients". Due to the existence of this development, POE was dropped in terms of associated fees, liability and insurance, the failure of POE seen as a responsibility of architects still (RIBA, 1965; Cooper, 2001, p.158).

On the other hand; Christopher Alexander and Henry Sanoff are two important contributors to environment-behavior studies. Christopher Alexander is as the pioneer of POE studies, because he focused on the significance of target user's needs

evaluation in his three publications: Notes on the Synthesis of Form (1964); Houses Generated by Patterns (1969) and a Pattern Language (1977). Henry Sanoff contributed to literature about POE with his significant source of "Evaluation Techniques for Designers" (1968).

In addition to these; Mallory-Hill et al. (2012) documented other important contributors of the building or space performance evaluations and they are milestones of the Post- Occupancy Evaluation as well (Table 4.1).

Table 4.1:Milestones of POE between 1965-1975: initial studies (Mallory-Hill, 2012)

Year	**Author (s)**	**Building Type (s)**	**Contribution to the Field**
1967	Van Der Ryn and Silverstein	Student dormitories	Environmental Analysis: concept and methods
1965	Manning	Offices and Schools	Comprehensive Building Appraisal
1968	Sanoff	Any Facility Type	The Evaluation Techniques for Designers- first monograph on existing building evaluation methods
1969	Preiser	Student Dormitories	Environmental performance profiles; correlation of subjective and objective performance measures
1971	Field	Hospital	Extensive Study of Tufts University Medical Centre facilities and staff
1972	Markus et al.	Any Facility Type	Model for Comprehensive Building Performance Appraisal
1974	Becker	Public Housing	Cross-sectional Comparative Approach to data collection and analysis

During 1970s, researchers identified new data collection tools and techniques for POE. The multi-method approaches to POE were introduced, a range of environmental factors was investigated together with 'non-physical issues such as management, not as isolated variables but to assess their relative importance to the users facilities' (Rabinowitz, 1988, p.12). POE began to use as a systematic and useful research method, rapidly applied by researchers on subsequent projects. This period is the era

of second generation of POEs that created a framework of usable techniques and precedents which turn into the foundation of the seperate discipline in environment-behaviour researhers (Rabinowitz,1988).

Until 1975, the term of Post-Occupancy Evaluation was not used in the literature. The first article which included the title with the term of POE was written by Herb McLaughlin and published in the AIA Journal Issue of January 1975. The study comprehended the POE research on the hospitals in Utah and San Francisco (Preiser and Nasar, 2008).

Table 4.2: Milestones of POE between 1975-1985 (Mallory- Hill et. al, 2012)

Year	Author (s)	Building Type (s)	Contribution to the field
1975	General Services Administration	Office buildings	Office system performance standards (Building research board 1987)
1975	McLaughlin	Hospitals	The first article published using the term POE
1975	Veterans Administration	Veterans Hospitals	POEs of the Veterans Administration Hospital in San Diego (Building Research Board, 1987)
1976	US Army Corps of Engineers	Millitary Facilities	Design Guide Series with updatable, state-of-the-art criteria (Building Research Board, 1987)
1976	Connell and Ostrander	Government facilities	POE s of the 'Postal and Enlisted Housing'
1976	Goodrich	Public Square	Observational POE Methodology
1978	New Zealand Government Architect	Public Buildings	POE development program launched
1978	Friedman et al.	All types	Environmental Design Evaluations-various approaches in evaluation from a human behavioral perspective
1979	Public Works Canada	Government Facilities	POE incorporated into project delivery system
1980	Daish et al.	Public Buildings including Millitary facilities	POE Process Guidelines (1st ed.)-development of the POE process for the NZ Government Architect (2nd edn 1981, 3rd edn 1986)
1981	Marans and Spreckelmayer	Offices	Evaluation model linking perceptual and objective attributes

Table 4.2 (Continued)

1981	Zeisel	Any facility type	Inquiry by Design-techniques for exploring environmental design evaluation
1981	Palmer	Any facility type	Programming linked to POE methodology
1982	Parshall and Pena	Any facility type	Simplified and Standardized evaluation methodology for practitioners
1983	Dufy and Chandor	Offices	Systems Design Standards
1984	Brill et al.	Offices	BOSTI study of 5000 employees linking worker productivity and office design
1985	Watson	Schools	NZ government architect uses POE for planning building modifications
1985	Orbit 2 (Davis et al.)	Offices	Office research linking buildings and information technology.

In 1980s, POE advanced in theory and practice. Because; it has been accepted as a distinct discipline and is described as a diagnostic tool in environmental research programs. POE was started to apply for large scale and multi-used environments; as retail centres, recreational and entertainment facilities and mix-used complexes. There have been also worked on urban spaces which demonstrates significant direction in that period (Whyte, 1980). Besides; numerous POE actions were carried out in UK, Canada, New Zealand, Australia and the United States.

As is pointed out by Marloy-Hill et al. (2012) , between 1985-1995 POE took a more sophisticated form as a distinct discipline. Such evaluation assumed as a practical tool kit which entered into programmes of numerous architecture schools as well.

Table 4.3: Milestones of POE between 1987-1994 (Malory Hill et al, 2012)

Year	Author(s)	Building Type(s)	Contribution to the field
1987	Building Research Board	Any Facility Type	POE Practices in the Building Process
1987	Daish and Joiner	Public Buildings	NZ Government Architect-building a database from POEs for building design and management
1988	Preiser et al.	Any facility type	Post-Occupancy Evaluation- first book on POE methodology
1988	Joiner	Public Buildings	NZ Government Architect- building POE into architectural practice
1989	Farbstein	US Postal Service	POE and organizational development
1989	Preiser	Any facility type	Building Evaluation-POE case studies from around the world.
1992	Sanoff	Any facility type	Integrating programming, POE and user participation in design
1994	Watson	Commercial retail facilities	POE for briefing/programming upgrading and refit of banks and petrol/gas stations.

During 1990s, POE was applied to understand the living environment in the process of design, planning and maintenance and it gives critical databases on the short and long term planning issues (Çubukçu and Akad, 2006). Between 1995-2005; the POE gained a serious position and especially used for the performance evaluation on facility designs and management programs of many organizations and governmental agencies. In those years; the POE achieved competitive advantage as organizational knowledge and private practice. Otherwise, the advances in technology transformed POE from a diagnostic tool to knowledge tool. It was applied as a more easier and cheaper tool for evaluation with the use of technology like online questionnaires, geographic information system (GIS), automated building controls, building simulations, etc.

During the era between 1995-2005 researchers extensively used POE for analysis of large scale, multi-year and multiple buildings as courthouses, hospitals and commercial buildings (Table 4.4).

Table 4.4: Milestone in 1995-2005: from POE to BPE (Mallory-Hill, et. al, 2012)

Year	Author	Building Type (s)	Contribution to the field
1996	ASTM	Offices	ASTM Standards on Whole Building Functionality and Serviceability- first comprehensive set of rating tools and methods recognized by standards organization
1996	Baird et al.	Any facility type	Building Evaluations Techniques-first comprehensive method book
1997	Preiser	Hospitals	A Hospital Activation Guide-process POEs for planning programs for VA hospitals
1997	Bordass and Leaman	Any facility type	Strategic Considerations for future building services based on PROBE studies (1985-2002)
1997	Preiser and Schramm	Any facility type	'Building Performance Evaluation'-conceptual BPE framework introduced
1997	GSA	Courthouses	US Courts Design Guides-integrates the findings of POEs of 160 courthouses
2001	Heerwagen	Offices	A balanced scorecard approach to POE
2001	Federal Facilities Council	Any Facility Type	Learning from Our Buildings-federal POE/BPE overview
2001	National Clearing House	Educational Facilities	Feedback based design standards for schools
2003	NCARB	Any Facility Type	Improving Building Performance-POE study guide for architects
2004	Mallory-Hill	Workplaces	Model for the domain of building evaluation
2005	Szigeti et al.	Any Facility Type	Performance based building conceptual framework
2005	Preiser and Visher	Any Facility Type	Assessing Building Performance- BPE studies around the globe

Across the world, almost over 50,000 POE works were completed up to beginning of 2000's. In Europen Continent, POE studies are generally conducted by the government. The Building Research Station, Ministery of Housing and the Department of Environment are among several governmental agencies that carried out systematic POE in England (Bechtel and Churchman,2002). POE has been conducted under governmental supports in other countries such as Norway, Denmark and New Zealand.

As mentioned by Baird (2001) POE are effectively going in Western Europe, because of the sufficient governmental supports and finances. Further on public supports, there are many POE studies which are contributed by the private sector in Europe and United States.

Since the second half of the twentieth century, POE/BPE come to be a global effort and various researchers, public agencies and organizations used it in their studies. Furthermore, the call for building environment evaluation is an ongoing process to follow a range of social trends toward human rights, accountability, consumerism, democratization, accessibility and sustainability.

Preiser and Nasar quoted on the progress in building performance evaluations and they highlighted the significance of performance evaluation for nurturing the quality of the environment.

> the 21st century has seen a new paradigm in replacing the hierarchical, command and control, top-down approach with consumer-oriented democratic approach, one that is autonomous, self-organizing, ecological, to sustain adaptation and continuous improvement (Preiser ed in, 2007). Nurturing and empathy replaces obedience and authoritarian solutions. It replaces design heroes with equality and bottom up evaluation. It calls for fairness, open two-way communication, community building, cooperation, trust and honesty. For places experince by public (both exteriors and interiors which are used by many people), the values of the public (consumer) take priority (Preiser and Nasar, 2008, p.88-89).

On the other hand; Preiser (2010) emphasized that the latest version in the evolution of the Post-Occupancy Evaluation regards to building performance evaluation (BPE) and universal design evaluation (UDE) in a holistic and process-oriented approach to evaluation that means along the facilities; political, economic, social forces are taken into account.

A wide range of evaluation methods for assessing occupied settings currently exist together with Probe Methodology, Design Quality Indicator (DQI), Achieving Excellence Design Toolkit (AEDET) and BRE Environmental Assessment Method (BREEAM). Since 2006 CABE have a focus on the design quality indicators (DQI) in order to sustain more functional and inclusive spaces for all community and it has several POE studies on that way. Besides; BREEAM is one of the extensively used environmental assessment methods for building and communities, developed by BRE, by setting standards for good practices in sustainable design and it was also aimed to provide safe, efficient, productive and inclusive places to communities. BREEAM, indeed, delivers environmental and sustainability issues, assists developers and designers to enhance their environmental projects, involves evidence-based researches on built environment design by using a straightforward scoring system that is clear and understandable (BRE, 2017). The significant contributors of recent POE studies were given in Table 4.5 below.

Table 4.5: The significant contributors of POE between 2006 and 2020 (CABE,2006; Emuze, 2013; Candido et al, 2016; BRE2017; Lai et al.,2020; Bae et al., 2020)

Year	Author	Building / space Type (s)	Contribution to the field
2006	CABE	Secondary Schools	Design Quality Indicator (DQI) evaluation-Assessing secondary school design quality; building functionality (access, space and uses), built quality (performance, engineering and construction), and impact (sense of place and effect on community
2006	CIBSE	Residential	Energy Survey Method was developed for Probe
2007	CABE	Residential	Assessing a sense of place through user satisfaction
2007	EcoSmart	Residential	Building Performance Evaluation Protocol for multi-unit residential buildings.
2008	Kosonen	Offices	A web-based IQE survey model-diagnostic tool to measurement.
2016	Candido et al.	Indoor environmental quality	A development of BOSSA (Building Occupant Survey System Australia) as a multi-diemensional evaluation tool

Table 4.5 (Continued)

2017	BRE	All facilities	BREEAM- BRE Environmental Assessment Method on sustainability through construction material, energy, fire and intelligent systems
2020	Lai et al.	Dormitories	Gap-theory Based Post-occupancy Evaluation (GTBPOE) to measure six aspects: visual comfort, thermal comfort, aural comfort, fire safety, hygniene, communication via information technology
2020	Bae et al.	Offices	Sustainable Post-occupancy Evaluation Survey (SPOES). Environmental quality aspects: thermal, lighting and acoustic conditions in workplaces

Since last decade, within an academic research agenda, the POE is a well-established sub-stream and a rich assessment product of work on the multifacet interactions between design and people in occupied settings. When the studies are examined, it has been determined that significant progress has been made in theory, method, strategy and applications in POE studies in the last decade, but the important studies are mostly carried out for questioning the indoor space's functional quality and performances. Established POE methods which were developed to investigate outdoor spaces performance and quality is limited.

A range of applied and published POE studies in literature is taken into account for the evaluation of indoor environmental quality of buildings such as public agencies (Farbstein, 1989); office buildings (Marans and Spreckelmayer, 1981; Brill et al., 1984; Marans,1988; Vischer;1988; Leaman and Boardass,1999; Sander and Collin,1995; Abbassazadeh et al., 2006; Konsonen, 2008; Mahdavi et al, 2008); mass housing areas (Reizensenstein et al. 1981; Karagenç, 2002); student dormitories (Van der Ryan and Silverstein, 1967; Preiser, 1969); schools (Watson, 1985), hospitals (McLauglin, 1975; Parshall, 1988; Zeisel, 1988; Varni J.W. et al., 2004; Carthey,

2006) and the quality of outdoor spaces as parks (Kaplan,1980; Salama,2008; Akıncı, 2010, Meirless et al, 2013); squares (Kılıç, 2001; Malkoç,2008; Wisibino, 2014); streets (Magagnin et al. 2012) and seafronts (Akad and Çubukçu, 2006; Özkan,2011, Fan et al. 2016) were also assessed.

In addition to these; the POE studies considering the design needs of people with disabilities in urban spaces had mainly limited focus and this little attention have been given to requirements of wheelchairs (Vizioli et al., 2005; Bromley et al., 2006), children (NLI, 2005; Veitch et al., 2007; Whitehouse et al. 2011; Hussein and Daud, 2014) and the elderly (Connell et al, 2007). Some academic researchers also searched on universal design features in urban spaces with audit checklists and physical observations (Yıldız and Polatlıoglu, 2013; Nimpuno, 2014). In the literature survey, there has not been any conducted POE to define the inclusive access needs of disabled and able-bodied people together.

4.3 Types of POE

In a broad literature, there are various taxonomies on types of POE studies and these taxonomies have been particularly done based on the structural form, implementation level efforts, implementation approaches, research field and complexity of POE works (Table 4.6).

Table 4.6: Different type of classifications of POE studies by different scholars

Reference	A set of POE types	Classification Theme
Campell (1977)	Formative, Summative	Structural Form
Preiser et al. (1988)	Indicative, Investigative, Diagnostic	Implementation Level Effort
London (1997)	Sociologic, Rationalist, Pragmatic Vision-Operational Perspective, Organizational	Implementation Approaches
Betchel (1997)	Academic, Scientific, Collaborative, Institutional, Entrepreneurial	Research Field
Meir et al. (2009)	Lateral, In-depth	Complexity of Research and Number of Cases

Campell (1977) clasified POE studies based on their structural form as;

i. **Formative POE studies** are based on the interaction between the occupants and built environment. The problem can be resolved through arrangement and adaptation of built environment to occupant utilisation. Formative researches stress the assessment of architectural spaces, before their construction, through several completed pilot projects which carry similar character. Besides; such kind of evaluations may be done for spaces that can be improved in the futures.

ii. **Summative POE studies** investigate to performance of design objectives. These studies are extensively carried out for making a comparison between the current and ideal or required performance features of the environment. The performance measurement is, hence, a necessary step to evaluation. According to Karagenç (2001), summative POE studies address the materialization of design objectives which are previously defined before the programming process.

Preiser, Rabinowitz and White (1988) outlined the different effort levels of POE researches and there are three types of POE:

i. **Indicative POE**
ii. **Investigative POE**
iii. **Diagnostic POE**

Those levels of POE could be explained with POE Process Model. The model shows differences of POE studies in terms of three phases; planning, conducting and applying. According to the model; typology of works should be clearly defined in terms of their objectives before the application of a research and the depth, amount of

time, cost, resources of the research is also determine type of the POE study which might be classified as Indicative, Investigative or Diagnostic.

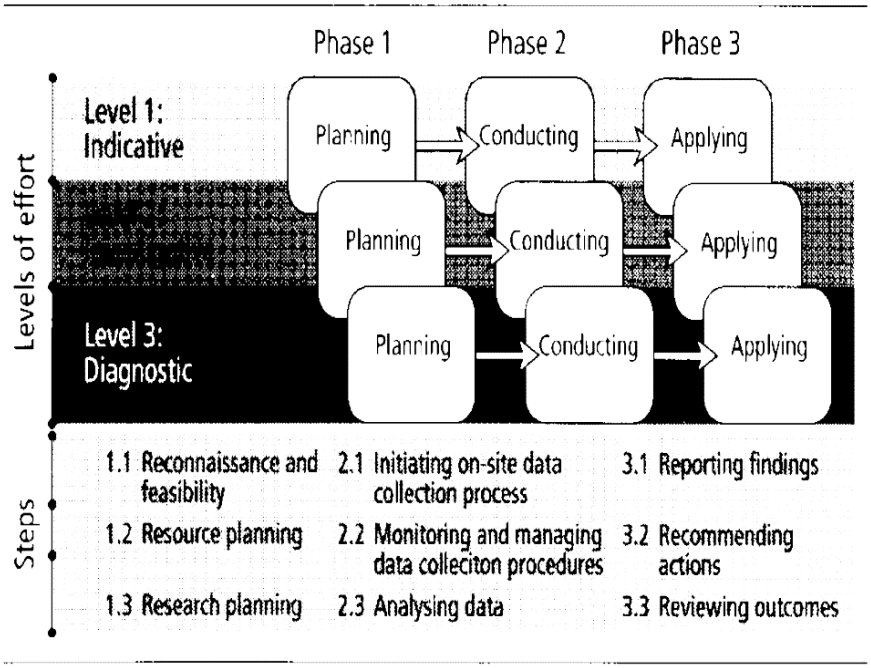


Figure 4.1: Post-occupancy evaluation process model (Preiser et al. 1988)

These three processes could be identified as follows:

i. Indicative POE is an effort to determine the general failures and success of the building. The physical characteristics of a place that nurture or hinder required or unnecessary behaviours for occupants are identified. Those POE studies are usually completed by one person in a short period (2-16 hours). The efficiency of research depends on the individual experiences of researchers. Indicative POE researches are generally prepared according to the following format:

1. The revision of the archival documentation about history, utilisation and performance of the building to collect initial data.
2. Gathering data on performance issue by using standard questionnaires.

3. The research usually includes walk-throughs, photographs and also other measurements.
4. Interviews are done with a few important people.
5. At the final stage; briefly written reports and suggestions are submitted (Cooper et al.1991, p.183).

ii. Investigative POE follows a similar procedure as the Indicative POEs, but undertake each step more in depth. Such type of evaluation necessitates 160- 240 staff and assistance of support staff service to conduct.

iii. Diagnostic POE requires the most sophisticated measurement techniques with considerable efforts and this kind of research is time consuming that takes several months to a year. They are conducted and completed by research teams and assistances. Diagnostic evaluations have differences from the other forms of POE works such as;

- They utilise triangulation or multileveled strategies to collect data on diverse variables.
- They use scientific research designs.
- They employ representative samples that allow generalizing results for similar buildings and situations.

On the other hand; the diagnostic POE measures the objective physical environment together with subjective user responses by making correlations between the datasets. When POE is used as a diagnostic tool, it provides a more comprehensive view of the relationships between the environment and occupant and it can also produce new knowledge about space performance for design professions (Wilkinson et al, 2018).

According to London (1997); POE possesses diverse techniques in use and it can be applied and implemented in various forms. Therefore; it is not possible to find any unique definition and a certain implementation approach on POE. From its formation to this day, POE has been used with different approaches and research models. Since POE has been carried out with diverse approaches in different disciplines, it has to resemble concepts. London categorized previously completed POE studies depend on their implementation approaches such as;

i. **Sociologic Approaches**
ii. **Rationalist Approaches**
iii. **Pragmatic Vision-Operational Perspective**
iv. **Organizational Approaches.**

London's classification could be explained such as:

i. **Sociologic Approach** emerged as an attitude towards failures of large-scale design projects. In this approach, the main objective is to make researches on the incompatibility of user needs and architects desires. The most important characteristics of the sociologic approach is to investigate unidentified and implicit human needs in the design projects.
ii. **Rationalist Approach** directly links to 'decision making' process and considers the evaluation of environment in use. It provides fine-tuning that represents an adjustment of design decisions for future. This kind of POE researches is used to develop solutions for future projects.
iii. **Pragmatic Vision-Operational Perspective** emphasizes on achievements of the design objectives and so it measures the project's success level by making the comparison between the environmental performance and design objectives.

In this approach; POE is a systematic and reliable process for transfer achievements of the existing environmental features to new projects.

iv. **Organizational Approach** emerged under building management and POE is generally used as a tool to decide on management of organizational goods. This concept does not only indicate arrangements of organizational facilities; it simultaneously refers to organizational structure, image and materialization or obstruction of organizational objectives (Karagenç, 2002).

Becthel (1997) highlighted that POE research could be classified according to the research discipline. Since its evolution, five types of POE have produced:

i. **Academic POE** could be classified into two types; published POE studies and class assignments. According to Betchel (1997); most academic POE researches are not published and they have only submitted as a class assignment.

ii. **Scientific POE** studies initially emerged with the development of research organization as EDRA. Social science professors applied POE research by developing scientific methods and they were scientifically collected data and statistically analyzed them for proving results.

iii. **Collaborative POE** researches are generally completed by only social scientists. The main aim of collaborative POE researches is to provide beneficial inputs for design by research groups involving designers and social scientists.

iv. **Institutional POE** might also be required by clients of design practitioners which mostly includes governmental agencies and large corporations. Because

they began to notice about the usefulness of POE that is necessary to complete the request proposal on the design project.

v. **Entrepreneurial POE** is the most recent development in the application of POE researches. The organizations started to implement POE in terms of determining their profits.

On the other hand; Meir et. al. (2009) divided POE studies into extensive categories: lateral and in-depth studies. While lateral studies have objectives to insight investigation of numerous case studies through a limited number of parameters. In-depth studies outline research framework for a more detailed analysis of all probable parameters in a single case study. Meir and others exemplified several lateral studies such as; European Research Project (HOPE) had 97 apartment buildings and 67 offices (Routledge et al, 2005, 2006) and the Probe Project included 20 office and public buildings in the UK (Boardass and Leaman, 2004), office and institutional buildings in the US as well (Zagreus et al. 2004).

4.4 Uses, Benefits and Obstacles of POE

Post-occupancy evaluation differs from other technical evaluations, because it mainly focuses on client satisfaction and functional fit to measure usability and serviceability of architectural space rather than emphasize aesthetics, building system and material performance. The other technical evaluations also indirectly concentrate on assessment criteria and they only prompt to offer safer or aesthetic architectural spaces which is not functional as much as users required. In POE studies, the evaluation criteria are developed according to the functional programme and occupant's needs.

According to Preiser (2001) there are several purposes of using POE:

- To evaluate failures and successes of the projects.
- To provide feedback for immediate problem-solving.
- To address questions regarding design projects and their impacts on user's needs. These questions might be related to maintenance, building organization or design-oriented.
- To research on effects of the built environment on their users. This kind of research generally carried out by architects, designers, environment-behaviour researchers and facility managers and they can easily be notified about environment-occupants interactions.
- To deliver programs for repetitive facilities. POE ascertains evolutionary improvements in programming and design criteria. It hence provides to practice the validity of main statements that justify repetitive design solutions. Thus; it helps to improve state of art design criteria and guideline literature for the design professionals.
- To provide fine-tuning of a facility. Such kind of evaluations help to test the adaptability of necessary changes and promote an ongoing process of adapting the facility to change organizational demands.
- To measure action and expenditure. POE assists to the organization to inform about accountability of the project.
- To test feasibility of new concepts and innovative ideas. This lead to learn about how a new concept could be practised well and ensures workability of innovative notions without risks.

In addition to these; POE serves legitimacy by proving “the usefulness of the profession for the public advantage” and the use of POE performs to realize two strategic purposes of architects; the first one is related to POE as an approach to provide improvement in quality and the second one involves POE that provides long-term sustainability from the built environment point of view (Hay et al., 2017, p.10; Hugnes and Hugnes, 2013, p.34).

There are various advantages to apply POE. As stated by Rabinowitz (1988) POE could be valued as a process that can improve and helps to explain the performance of a built environment and so it is “necessary, indeed, an axiomatic phase of the design and construction process, and exactly the kind of integrated assessment essential for the design of more sustainable places” (Meir et al., 2009, p.189).

The most striking benefit of POE is to provide humanitarian and appropriate environments for people. POE helps designer to make research for the amelioration of their projects suitable with changing demands of individuals and organizations alike (Preiser, 2001).

As a result of many benefits from POE studies, it has led to the development of studies in this area. According to Preiser (1995) the performance of both existing and newly constructed spaces might produce unfavourable effect on the user’s expectations. The following critical issues which is obtained from the applications of POE studies, identify main difficulties that generate negative impacts on the environmental performances and user’s needs as well.

- Health, security and safety problems
- Comfort issues
- Aesthetical issues
- Surface Maintenance problems
- Waste of Energy
- Poor signage and wayfinding problems
- Poor air circulation and temperature control
- Handicapped accessibility problems
- Lack of storage
- Lack of privacy
- Leakage issues.

POE provides subjective and objective feedback that enables to inform planning and practice through the life cycle's of projects from initial design to the occupation (Meir et al. ,2009). The short, medium and long term benefits of POE could be given as following (Preiser, 1988).

Short-term Benefits

Failures and successes of environmental performance are determined in the short term and appropriate proposal on problem solutions are immediately improved. The most significant short-term benefit of POE concerns difficulties about budget limitations, because POE provides the information necessary for the production of the built environment which is high in quality and performance, with a little budget. The short-term benefits involve the following:

- *Identification and solutions to problems in facilities:*The POE studies are aimed to determine existing problems and solve them in a short period (Zimmerman and Martin, 2001).
- *Pro-active facility management that responds to the user values:* The main purpose of management is also aimed to services utilisation toward organization and user driven facilities in a balance.
- *Improved space utilization and feedback on the performance of space:* The information gathered from POE`s results are valuable to provide feedback Using POE results rectifies shortcomings for the future project (Zimmerman and Martin, 2001).
- *Improved attitudes of occupants through active involvement in the evaluation process:* Inputs of POE measurement obtain data that assists to perceive the environment from the occupants' point of view (Preiser, 2001).
- *Understanding the performance implications of changes dictated by budget limitations:* POE assists to identify impacts of limited budget on the organization of a facility.
- *Informed decisions making and a better understanding of design consequences:* It is essential to gather data on outputs of design project regarding its compatibility with the budget and design programmes objectives (Karagenç, 2002).

Medium-Term Benefits

POE could support inputs in terms of regulations on problem solving, the adaptation for re-use, the refurbishment of an existing environment or data source on more bigger

structures. The medium-term benefits are extremely related to the main design decision of environmental product and they include the following:

- *Built-in capability for facility adaptation to organizational change and growth over time, including recycling of facilities into new uses*: The similar environments could be used by different user groups, organizations or people who have varied utilisation demands. The utilized environment have to respond to changing needs and demands of occupants or users. Since; the alternation of an existing environment is inevitable, POEs provide desired data on required changes for a new function.
- *Important cost savings in the building process through the building life-cyle.* POE obstructs outstripping budgets through repetetition of management errors, faulties of technique application and planning mistakes (Preiser, 2001).
- *Accountability of space performance by design professionals and owners:* The materialization of expected space performance is directly depend on designer. The designers should initially identify expected performance values during the programming process and an essential design criterion must be involved to design. It is hence expected from owners to assess performance in terms of required utilisation objectives.

Long-term benefits

The long-term benefits are related to learned failures and successes from the results of environmental performance practices. Long-term benefits could become into sight three or ten years after the completion of a project and they are consist of the following:

- *Delivers long-term improvements in the space performance:* The continuous evaluation of performance supports important input for evaluators in terms of improvement utilisation of space through suitable arrangements and the space facilities gain long-run character.
- *Improvement of design databases, standards, criteria and guidance literature:* All input figures which are gathered from the entire evaluation processes and performance assessments, could be used for the design of architectural environments belong to special uses. Obtained data is, collected in the data bank, then transformed to standards and criterion by relevant authorities.
- *Improvement of space performance measurement system through quantification:* Obtained data through performance measurement may be qualitative and quantitative in a character. While quantitative features could be defined with numeric expressions, their identifications are easier than qualitative measures. Due to access certain results; the essential problem includes validity of the evaluation model, research tools and measurement techniques. Accordingly; it is required to performance measurement techniques and model development.

As it is mentioned above, conducting POE supports overarching benefit like continuous improvement. Outcomes from POE started to add value to the next project and then POE began to be used as a valuable measurement tool by designers and design firms. POE also provides to examine for optimum utilization and gained competitive edge over other design firms which have not conducted it.

While, the POE has various benefits, POE works are mainly prefered by large organizations and institutions. Implementation of POE might possesses obstacles or difficulties related to cost, time, defending professional territory, skills and these are mentioned as significant obstacles which entailed careful consideration before implementations of such studies. Preiser (2001) mentioned about numerous possible obstacles which may expose failures of POE as follows:

- The complexity of creating a certain causal relation between positive outcomes and physical environment. The absence of any relation can create problems to convince decision-makers about the spending time and money on the evaluations.
- The reluctance of organizations and building professionals to attend in a process that may be reasoned with failures or may be used as a method to emphasize culpability.
- Lack of participation by user or occupants. This may expouse problems on scarcity of resources or producing discernible commendation of the program.
- Capture to promote feedback from user on the ground that either seeking and receiving this kind of data can compel an organization to make costly changes to its facilities or to do building itself.
- Problems about delivering data causing from POEs to decision makers and other stakeholders.
- Difficulties to meet design and construction deadlines may produce a time barrier to persist POE activity. Staffs may be stressed on following projects and ongoing construction, because POEs over finalized and occupied projects provide inferior importance.

- Organizational structures may arise obstacles when responsibilities for POE administration and lesson-learned database development are ascribed to different offices, by the means of creating a demand for inter-office collaboration and blurring the lines of accountability.
- Scarcity of in-house staff having a wide range of skills and technical expertise on the management of evaluation results and convey the data that it is useful or not.

4.5 Development of POE Research Framework

The workable POE process a well-organized framework. In order to provide effective POE; each process of assessment should be clearly defined at the outset of a research program. The development process of POE program necessitates the organization of an evaluation within the systematic framework which includes operational principles on research.

4.5.1 Basic Principles of POE Program Development

Post-occupancy evaluators should develop well-organized and systematic research frameworks for their evaluations. Implementation of POE research, is not a simple, but complex process that requires management of necessary information and techniques. In both literature and practice, there are six key principles for POE studies which serve researchers as a basis for the development of effective research framework on their evaluations and these principles involve:

1. Building/space purposes: It is required to compare performance of space in use with expectations which are framed during the construction stage. Systematic evaluation must employ to define the purpose of architectural space as a comparative benchmark for POEs which carries different implications from values, the program and goals.

2. Critical performance: Critical performance is changeable in a character and could be ascribed from space purposes. It can be developed through certain standards that each space should have. It is different than general performance criteria, because they just reflect character of those criteria that is defined under user needs.
3. Established methods: POE researchers should develop a series of methods to use in their assessments. This multi-method methodology contains interviews, walkthroughs, questionnaires, behaviour observations, unobstructive measures, etc.
4. Optional depth of investigation: Depth and focus of POE evaluations are optional and depend on the research problems, interests and objectives. However; diagnostic POE approaches include more practical problem solving tools.
5. Pre-designed data management: In order to reach successful POE results, data for assessments must be gathered in a systematic way. It is also required a set of organizing hypotheses which previously developed within an analytic framework. POE evaluations could be achieved by constructing proper models about user responses to environments and these models refer to required data on structuring questionnaires and survey instruments.
6. Pre-established database structure: Databases which are pre-established and pre-structured are more effective for making decisions. Database design needs structuring hypotheses that interconnected a common theoretial and practical strand. Data collection methods, statistical data analysis and databases must serve to test those structured hypotheses (Zeisel,1988).

All of six POE principles which were mentioned above, must be intended to POE assessment from the beginning of its program and they are also assumed as areas for

agreement in POE evaluations that accepted as standard part of research and design of a POE research by investigators (Zeisel,1988, p.169-170).

4.5.2 Structuring POE Research Program

POE Research program must be identified from the outset of an assessment, because the well-organized evaluation process enables evaluators to get the most from POE. A suitably planned POE program must involve necessary steps which were shown in the figure below.

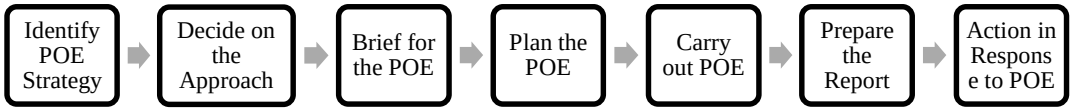


Figure 4.2:Post-occupancy evaluation (POE) process (HEFCE, 2006)

The most effective evaluation involves a combination of techniques. The systematic evaluation lead to researchers to define problems against probable mistakes:

i.Identify POE Strategy: The initial step of POE entails identification of needs for the assessment. POE strategies should be defined in terms of the subject of appraisal and also desired detail level when the evaluation is to be employed. The main focus of the POE research has to be considered according to its targets. The targets should be identified from the outset of POE based on the following issues:

-who are consumers of POE results

-how best to communicate these results to them

-how much detail and which purposes serve to POE (Visher, 2001).

ii. Decide on the Approach: Evaluator can either develop his/her technique or use an established method. The selection of the methods and evaluation techniques depends on the following issues:

- The level of required detail

- The level of available information
- The available resources in terms of time and money
- How quickly the study is to be conducted
- The skill levels of experts who will be carried out the study.

iii. Brief for the POE: It concerns determining how the purposes of POE is to be achieved. If it is team work, the important questions should be answered:

-who will carry out stages of research?

which methods will addresses specific issues?

-where will the mentioned methods be considered?

-who should be involved in an assessment (users, staff, students, etc.)?

iv. Plan the POE: This stage includes works on time-scheduling on POE research and prepearation of inventory forms such as questionaire survey forms, interview and observation schedules.

v. Carry out POE: It is the process related to the completion of a data collection process.

vi. Prepare the report: The outcomes of research should be systematically documented in well-structured reports. The end of results from different survey techniques must be reported in seperate schedules and then they should be compared within a suitable way.

vii. Action in response to POE: This stage includes the publishing process of POE.

On the other hand; in his published work,`POE Value Engineering`(1989), Kirk explained the necessary research framework through the process-tehnique model with value engineering. According to the model an ideal POE research could be achieved

by `POE Value Engineering Process` which encompasses four different phases as follows:

i. Exploration and Preliminary Data collection
ii. Research design
iii. Data collection
iv. Documentation and Data Analysis.

These stages could be examined such as:

i. Exploration and Preliminary Data collection includes initial observations through initial site visits, interviews with administrative and official staff. After the completion of the exploration, the preliminary hypotheses could be developed.

ii. Research Design is related to systematic organization of gathered data from the exploration process. Following that; established preliminary hypotheses are transformed to privatized and testable issues.

iii. Data collection involves the implementation of POE with suitable research tools such as questionnaires, systematic observations, environmental measures, video records and photographs for periodic surveys.

iv. Documentation and Data Analysis contains the comparison of original design hypotheses with collected data. Based on the research findings; the collected data may be confirmed or refused hypotheses.

4.5.3 Evaluation Tools and Techniques

In POE studies, it is essential to define the most suitable and effective tools for the evaluation. It is significant to choose ideal evaluation tools and techniques which can serve to measure the selected indicators on space performance. It should be decided

to either multiple tools or a unique technique that available for structured research. White (1988) pointed out that interviews, questionnaires, walkthroughs, user diaries, decision tracking, simulation, behavioural traces, computer modeling, design logs, behavioural mapping, physical measures, photography, videos, observation, audits, remote sensing, movement detectors, infrared and chemical analysis are among the tools which are available to use singularly or in a combination in a POE.

Jaunzens et al. (2003) are highlighted the methods which are currently prefered to use for testing hypotheses in the framework of POE researches. In order to obtain benefits from POE researches, it is required to apply methods and interpret their results. Since, organizations are prefered to develop their own measurement protocols, a range of POE methods exist today. The most preferable POE methods could be exemplified as follows:

- Standardized questionnaires (with staffs, business managers, facilities managers, customers, etc.)
- Interviews (with staff, business managers,facilities managers,customers)
- Observations (on staff at work, occupants,etc.)
- Physical monitoring to deliver a sort of objective evaluations.

As mentioned by Kirk and Spreckelmeyer (1988), POEs could be implemented through various survey techniques which could be examined in the taxonomy of five steps:

i. **Observation and archive research techniques** address to review on original purposes of architectural design and to evaluate how occupied built

environment meet with those purposes. Three facilities are performed within the context of these techniques:

- *Search on user reaction;* the main aim of evaluation is to examine user reactions which can clarify situation of environmental usage. While user's reactions are evaluated, evaluators should do systematic observations and records for each details.
- *Identification of research topics;* evaluation subjects can be listed in terms of qualitative and quantitative environmental features while qualitative aspects concern users actions, activity zones, utilization areas, quantitative aspects involves the size of activity zone, people density in such zones, the level of environmental comfort and safety, etc.
- *Development of hypothesis;* hypothesis could be determined during the process of observations and data collection.

ii. **Interviews** are mainly completed with occupants, designers and owners of discussed envionment. Interviews should be well-arranged. The numbers and topic of interviews have to be defined at the beginning. Interviewer should have knowledge on environment and its performance and so the most suitable interviews could be done with designer, architect, planner, facility organization and director of discussed environment.

iii. **Questionnaires** are used to investigate on influences of environment to human behaviour and experiences. The main purpose of the questionnaire is to test and measured hypotheses. Gür (1996, p.191) stated that if the evaluator is well-determined the research problem and hypotheses, he or she would have a chance to gather effective data about research topic. It is required to well-

organized questionnaire form with coded answers and determined question techniques from the beginning of the survey. Effective questionnaires posses qualities as inspection, influence, depth and sensitiveness and persuasions:

- *inspection;* it is essential to prevent any misinterpretations of the questionnaire, therefore the questionnaire should be clearly organized. More compact questionnaire forms might be reasoned with the rejection of influential solutions.
- *influence;* the researcher should avoid from the influence responders' answers and be insensitive about the research topic.
- *depth and sensitiveness*; pilot studies might hinder possible mistakes through finding clues about research and they can assist to notice any missing items in questionnaires.
- *persuasion*; using quantitative scales- as very good, good- in questionnaires will motivate responders to answer in an influental way.

iv. Environmental measurement techniques include both quantitative and qualitative techniques:

- *quantitative measures* could be taken into consideration for issues such as the level of illumination in working environments; the level of comfort by issues as heating, humidity, climate; the size and organization of functional activity areas; the density of people and object in the environment and the durability and erosion quality of surfaces. Quantitative techniques have to carefully chosen before required measure and the detailed complex measures must be prefered instead of simple measures. Because; the built

environment are extensively used within the complexity of social and physical interactions of a space.

- *qualitative measures* provide to investigate on the quantitative data to which extend influences of user behaviour based on the environmental aspects. Data could be measured directly or indirectly. While direct measures may influence users behaviour and take a long period; indirect measures involve off-site measures which are not perfect; but proceed short period.

v. **Data analysis techniques** refer to the interpretation of collected data and assist to evaluate collected data with:

- *Frequency change statistics* demonstrate questionnaire results through an average or sample meanings of each variable.
- *Bivariate statistics* indicate the relationship between two variables and they denote a tendency of a variable or variable groups in a wide statistical cluster.
- *Multivariate statistics* assist to explain the results of multiple variables and they provide to collect simple variables together.

On the other hand; Gür (1996, p.189) classified the evaluation techniques which could be used in environment-behaviour researches as POE.

Table 4.7: Different evaluation tools and techniques which can be used in POE works (Gür,1996, p.189)

		Questionnaires (verbal)	Questionnaires (visual)	Interviews	Semantic differentiation	Determinations	Morphologic record	Documentary research	Time and Cost Budgets	Behavioural Observation	Behavioural Maps	Physical Tracking	Simulation	Cognitive map	GIS
Time	yesterday and today				•	•	•	•		•	•	•		•	•
	Future								•						•
	Yesterday/Today/Future	•	•	•									•		
Quality	Existing	•	•	•	•	•	•	•		•	•	•		•	•
	Optimum								•						
	Ideal	•	•	•									•	•	•
State	Active			•					•						•
	Passive	•	•		•	•	•			•	•	•			
	Interactive												•		

4.6 Summary of the Chapter

POE is a user-based evaluation approach which is a method for appraising performance and quality of the occupied environment. POE studies usually concentrate on user satisfaction or functional fit in architectural or urban space. POE might be intended for various purposes and they can be used in numerous forms.

POE works have certainly an imperative role in performance measures. POE is not indeed a special technique but it embraces the research framework to extend which the use of multiple techniques in any assessment. It hence possesses subsequent impact on environmental evaluations by considering either qualitative and quantitative aspects.

POE initially emerged as academically based studies in 1960s and 1970s and these studies mainly focused on the relationship between human behaviour and architectural design. During 1970s researchers identified new data collection tools and techniques

for POE. In 1980s POE was started to apply large scale buildings. In 1990s POE was applied to understand the living environment in the process of design, planning and maintenance. Between 1995-2005, the POE gained a serious position and particularly used for performance evaluations. Accordingly; POE achieved a competitive advantage as organizational knowledge and private practice. In the last decade, POE became a special environmental assessment method and has been implemented by using diverse variables and such measures were done team or individual. At present, environmental evaluation is still an ongoing process to follow a range of social trends such as accessibility, democratization and sustainability.

Based on the results of an extensive literature survey, it was noticed that POE regarding the design needs of people with disabilities have mainly limited focus and this little attention have been given to needs of wheelchair users, elderly people and children. There have not been any conducted research to explore inclusive access needs of disabled people and non-disabled people together. Therefore; this research will make a valuable contribution to the literature. Accordingly; the established POE model on inclusive access will be explained within a systematic framework in the following chapter.

Chapter 5

POST-OCCUPANCY EVALUATION (POE) AS A DIAGNOSTIC TOOL TO ESTABLISH AND SUSTAIN INCLUSIVE ACCESS IN URBAN OPEN SPACES

In this chapter, a POE model has been developed to examine the functional quality and performance of urban open spaces for people with and without physical disabilities. The model seeks to propose POE criteria on inclusive access of people with a range of mobility capabilities in terms of health, age and income level. When the POE model has been established, great emphasis has been given to the physical accessibility of urban open space users' in city centres.

The established POE helps to identify the real situation of how the urban open space performs for its users. Rigorous POE study provides valuable information for the design and it has been included in a systematic review. This model could be best explained in terms of different processes of the urban design project.

- Programming Process
- Design Process
- Implementation Process
- Occupancy Process
- Evaluation Process
- Redesign Process
- Re-use

The POE model is developed for previously designed urban open space and occupancy, evaluation and redesign processes are emphasized for the model development.

While, the model will assist to determine failures of urban open space, it creates opportunities to redesign for its re-use.

The POE model has been explained according to three processes: occupancy, evaluation and redesign.

5.1 Occupancy Process

There are diverse ideas about the understanding of occupation and occupational function. However; the common debate involves the notion that occupation is performed within a context which has societal rules, a person's developmental stage and the environment where people lives. The occupational function is related to a person's physical, mental, emotional and spiritual features (CAOT, 1991, Law, 1991). Accordingly; occupational performance results from the dynamic relationships between people, their occupations and roles and the environments in which they live, work and play" (Law et al 1996, p.9).

As mentioned by Kahana (cited in Law et.al 1996, 1982) both individual and environmental characteristics have an impact on functional performance. Kaplan (1983) asserts person-environment compatibility depend on the relationship between the internal environment of the individual and the opportunities and choices offered by the external environment. Informational processes as perception, attention and planning have a substantial effect on a function.

The research on human ecology is related to the relationship between persons and their environments**.** Person and environment tasks should be assumed as a two-way process and it is required to identify such process in a transactional value. A great deal of useful information about the occupancy process has emerged from the multidisciplinary field of environment-behaviour studies. This has begun to document the interaction between

individual behaviour, social rules, cultural values and the physical context (Moore, 1979).

Design strategies have to address the environment-person fit design model which requires alteration of the environment with suitable arrangements that fit a broader range of capabilities. Before the development of any design strategy, the person-environment relationship must be understood by testing the occupancy process. Since the main focus of study is the inclusive access of people with and without physical disabilities, the interactive framework between the user and urban open space has been developed on the basis of mobility characterization and movement patterns. The sub-model of occupancy process have been indicated as below.

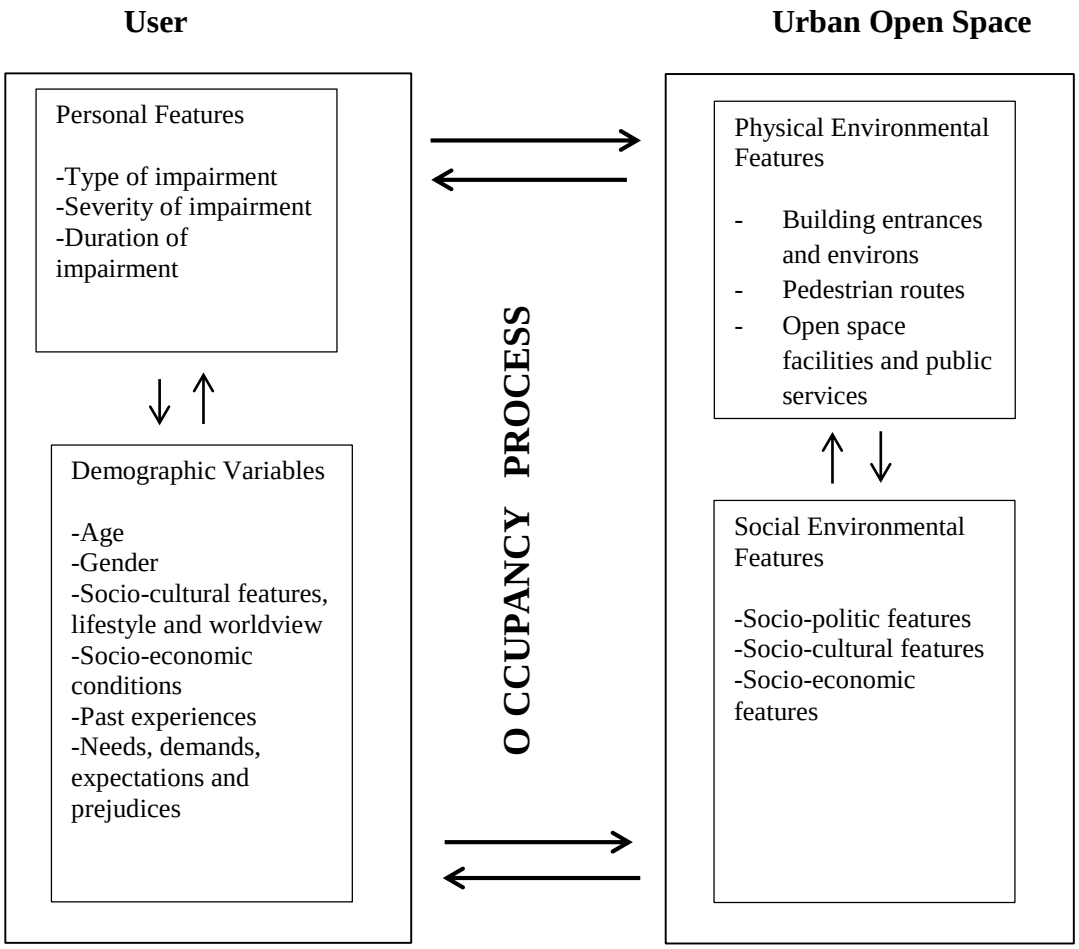


Figure 5.1: The sub-model shows the interaction between the user and urban open space

5.1.1 User

In this study, the term of user refers to people with and without physical disabilities. Physically disabled people have motoric impairments. Motoric impairment is related to restrictions on bodily movements that are more readily perceived by the public than sensorial ones. Motoric problems mainly concern with mobility problems and the cause of those mobility problems may be found in age, accidents, illness and sensorial impairments (Heiss et al, 2010).

The blanket term, people with physical disabilities, denotes mobility disadvantaged people who use assistive devices such as wheelchairs or scooters, canes, walking sticks or frames. In addition people with hand and arm deficiencies, pregnant women, parents with a pushchair/double pushchair, people with heavy luggage or delivering supplies, elderly people, children under seven years old and other individuals who have chronic illnesses may not think of themselves as disabled, but require similar accessibility accomodations (Bannert and Elnokaly, 2013).

Since a person is seen holistically as a compound of mind, body and spiritual qualities, the person carries diverse features that are influenced by existing characteristics of the environment. The environmental context offers a varied functional tasks and activities where the person engage over the lifespan (Law et al. 1996). While the role of each person has a dynamic interplay in terms of their personality style, cultural background and personal competencies and diverge abilities related to their motor skills, sensory capabilities, cognitive attitude and general health, each person requires a set of skills in order to participate facilities of urban open spaces.

The personal skills or capability of urban open space user's may differ in terms of their physiologic features and demographic variables:

- Personal Features
    - Type of impairment
    - Severity of impairment
    - Duration of impairment and Timing of Onset
- Demographic Variables
    - Age

- Gender
- Socio-cultural features, lifestyle, worldview etc.
- Socio-economic conditions
- Past experiences
- Needs, demands, expectations and prejudices.

- **Personal Features**

Human being has been designing artefacts depend on their personal features. Ancient Greece's sophists perceived the human being as the "measure of all things" and they formulated how the built environment could be dimensioned for the human being. The dimensions of the human body were firstly described by Vitrivius around 25 BC and famously illustrated by Leonardo Da Vinci. Following Leonardo's Vitruvian Man, Le Corbusier and Neufert have drawn geometrical presentation of body posture which have not any signs of disability and varied physical capabilities.

The body features are actually varied in terms of changing capabilities and skills. Therefore; the designers and planners must learn about difference and diversity in capability. Physiologic features are directly related to anthropometric or ergonomic measures and these features can also change in terms of type, severity and duration of impairment.

-Type of Impairment

In order to design inclusive urban open spaces, designers have to understand various needs arising from different impairments. People with physical disabilities can be also categorized as:

- People in a wheelchair or a scooter
- People with walking difficulties
- People with arm and hand deficiencies
- Pregnant women
- Parents with a pushchair or double pushchair
- People with a heavy luggage
- Elderly people
- Children under seven years old
- People who have mobility restriction due to other chronic illnesses.

Universal Design Pyramid can assist design professionals to be aware of the different needs and necessity of changing spatial interventions for people with various disabilities (Goldsmith, 1997). The built environment professionals must initially learn about how impairments affect disabled individual's performance in the built environment. They have to notice that single package solutions are not suitable to design inclusive spaces and to realize independent and integrated living necessitates different solutions towards disabled persons with diverse impairments and circumstances. For instance; wheelchair users may need a more inclusive design solution than pregnant women or children. Sidewalks without drop-kerbs might not inhibit pregnant women or children, while restricting the use of wheelchair confined people.

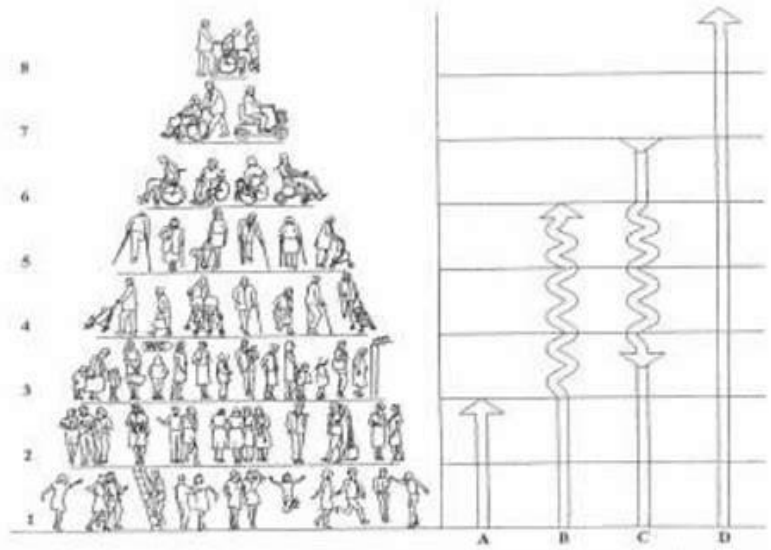


Figure 5.2: Universal design pyramid (Goldsmith, 1997)

-Severity of Impairment

Disability does not only have heterogeneity in terms of impairment type, the pathologies of disability might vary in terms of severity of impairment. Disabled people needs from the built environment design can vary according to the severity of their impairments. The severity of impairment has pathologic classification:

- Mildly disabled
- Moderately disabled
- Severely disabled.

People are severely disabled if their degree of physical, mental or emotional impairment exceeds 50% and not only temporarily. Severely disabled people with a degree of 100% can still achieve full performance in their chosen activity provided their respective disability does not affect the particular task. The nature of "the constraint in conjuction with the activity that is important" (Heiss et al. 2010).

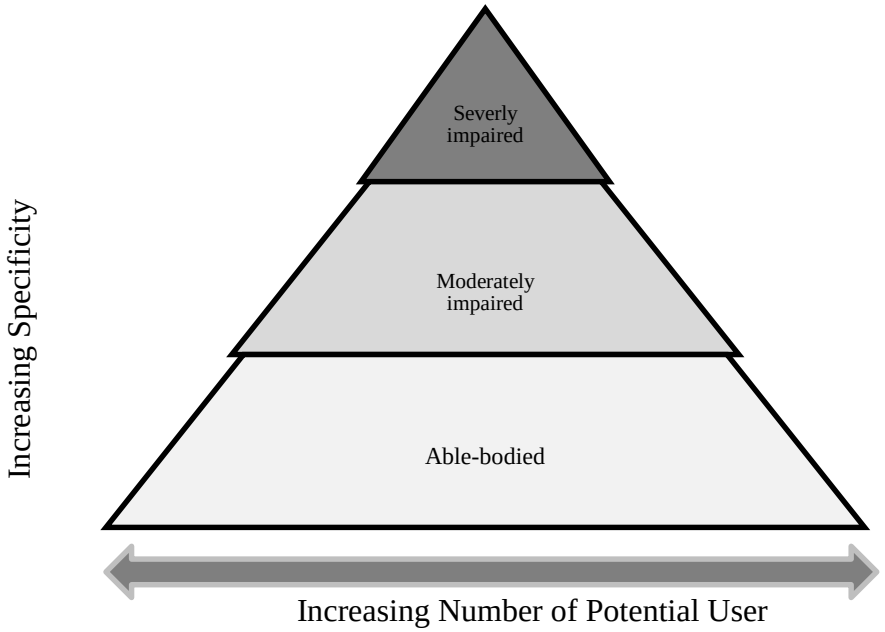


Figure 5.3: Benktzon's design pyramid (adapted from Benktzon 1993, Hanson, 2004, p.15)

Benktzon (1993) indicates the necessity of considering the severity of disability for reaching the realisable goal in an inclusive design approach. In order to provide more inclusive access in urban open spaces, the basic focus should be given to severely disabled people needs (Hanson, 2004).

-Duration of Impairment and Timing of Onset

It is the other significant physiologic feature that influences a disabled person's behaviour and attitudes in an urban open space. Duration of impairment refers period in which a person has a disability, while the timing of onset concerns starting time of disability situation such as childhood or adult onset. Both features influence the experiences of disabled people about the built environment usage.

- **Demographic Variables**

The demographic variables are among the other determinants which influence the functional performance of the user in urban open space. The personal or mobility capabilities may also change in terms of age, gender, socio-cultural features, socio-economic conditions, past experiences, needs, demands, expectations and prejudices. They are determinants that influence the level of function in urban open space.

Needs and demands of physically disabled person might be classified as:

- Basic needs (health, safety, comfort)
- Individual needs (self-control, self-esteem)
- Societal needs (affiliation and social contact).

The built environment should be designed according to all mentioned needs. Since the identification of mobility classification is a fundamental aspect of design, planning or refurbishment of the built environment, the numerous details on necessary spatial arrangements could be separately extended in terms of different mobility groups.

- **Needs, Demands and Expectations of Users in Urban Open Space**

To accomplish inclusive access is dependent on the provision of functionality that necessitates a design proposals recovering maximal use. Design specialists should know necessary technical solutions which should tolerate body differences. Needs, demands and expectations of users who have changed personal abilities and body features, should be included in urban design proposals. The basic needs of different kind of mobility groups have been briefly explained below.

i. People in a wheelchair or a scooter: These people confined manual or motorised wheelchair. The wheelchair/scooter users need appropriate distance for

manoeuvring and circulation. Besides, they need different measures in order to gain easy, independent and comfortable movement. Urban open space should be suitably designed according to the dimensions of a wheelchair. The basic expectations of these user group from the physical environment includes proper arrangements as ramps with suitable gradient, handrails provided to comfortable and safe usage, wider sidewalks to easy circulation, grids and street furnishing elements which are placed at the outside of the pathways, the accessible height of the ATMs, telephone boxes, door hands, etc.

ii. People with Walking Difficulties: This group involves ambulant disabled people who have mobility deficiencies to walk. They generally need to use assistive devices as canes, walking sticks, crutches, mobility frames and so. Improper design of urban open spaces creates problems related to balance and safety for ambulant disabled people. suitable ramps with handrails and safe surface covering materials are among some basic needs of ambulant disabled people.

iii. People with arm and hand deficiencies: These people can not easily use their arms and hands or can't use any of them. Hence; it is necessary to present design equipment that can be easily and effortlessly grasped. The street furnishing elements as ATMs, telephone booths, ticket machines, should be properly designed for their uses.

iv. Pregnant women: Pregnant women need much effort while using built environment. Suitable resting facilities, street level differences and sidewalk's surfaces are among some significant features which serve the needs of pregnant women in urban open space. Safety of pregnant women is a more important criterion, therefore pavement surfaces, curb ramps and stepped zone should be designed in an ideal form.

v. People with pushchair/double pushchair: The length and width of child pushchair, both single and double may be varied. The urban open space should be accessible to all kind of children pushchairs. The use of a child pushchair require much effort in the built environment. An adequate width of pedestrian zones, suitably textured surfaces of sidewalks, ramps /cur ramp and pedestrian crossings, appropriately designed car parking, sufficient space for manoeuvering are among some arrangements that have to be considered for accessibility of people with pushchairs or buggies in urban open space (Goldsmith, 1997).

vi. People with heavy luggage: People who are carrying heavy luggage need much effort in the built environment. Unsuitably designed warped and cracked paving slabs of sidewalks, curb ramps, pedestrian crossings and unsuitable steeps or ramps can create problems related to the balance of these user groups. The properly designed urban open space can make the movement of these users easier.

vii. Elderly people: Rather than other groups suitable arrangements entailed more considerations for the elderly person. Because they might be also mentally retarded. The elderly people generally undergo from thinning of bones, muscle disorders, balance problems, extensive exhaustion, sight and hearing disorders. Elderly people generally experience complications related to their mobility capabilities, spatial perceptions and mental capacity (Oğuz, 2003, Türel et al., 2007). When asked why they do not walk, elderly people respond distance between destinations, difficulty in walking, poor sidewalks, lack of places to rest, fear of crime among the factors which create difficulties in the use of urban spaces.

viii. Children: Urban open spaces and facilities which are to be used mainly by children call for a suitable response to the design. The needs of children, especially for safety, are significant while planning all open space facilities. While the design

makes sure of all people accessibility, the facilities that are ideal for the use of children, should be placed at heights that allow them to use without assistance.

5.1.2 Urban Open Space

Environmental context has an impact on the users' behaviour. During the occupancy process, the obtained transactional values from environmental supports or barriers may influence the level of users' satisfaction. Establishing and sustaining inclusive access in urban open spaces necessitate the quality provision of both physical and social environmental elements that influences inclusive access.

- **Physical Environmental Features**

The physical environment can directly impede people to participate in urban open space facilities. The physical environment includes diverse features and an inclusive design at the utmost importance for these features. Making notable arrangements with available practice codes, standards and design specifications can increase the quality and performance of physical environmental features that assist to improve inclusive access in urban open spaces. These physical environmental features include:

- Building entrances and environs
- Pedestrian routes
- Open space facilities and services.

Urban planners, engineers and architects must design the urban open space without barriers. The inclusive access design proposal should be considered from the architectural space to city planning. In the following lines, required arrangements and standards on physical environmental features have been explained.

- **Building Entrances and environs**

Everyone should be able to enter and leave the building by using the same entranceway. The access to the building entrance should be provided with a clear entrance that does not intersect vehicle access. The width of entranceway must also suit to usage density. The entrances should be designed to provide safety of users. Therefore; the entranceway should have even and smooth surface material against probable hazards. While the most official design guidance manual suits special provisions for the changing levels of entrances, such as platform lifts, spiral ramps toward the physically disabled person, those kind of special arrangements neglect disabled users who wish to be treated as a normal person and if the ramps is required it should be placed at the rear of steps for the dignity of disabled users.

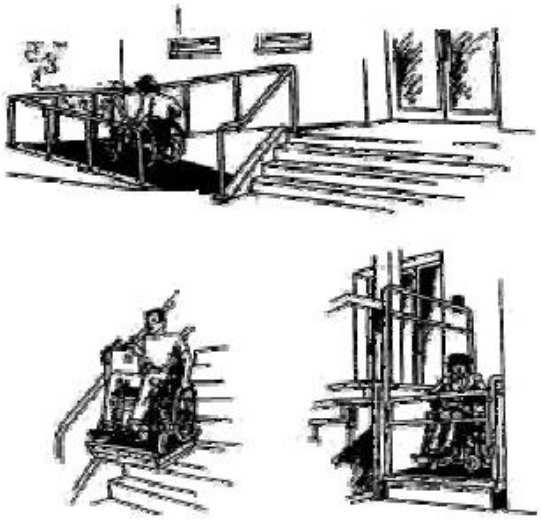


Figure 5.4: Building entrances with platform lifts and stairs (ASI, 2001)

In order to provide safety and comfort at building entrances, it is required to place a landing with a suitable material. The inevitable level changes could be suitably arranged with ramps instead of stairs.

In an urban design agenda, the basic design specification for building entrances and environs involves:

- Width of entranceway
- Material of entranceway
- Gradient/changes in level
- Location of the ramps at the entranceways.

The width, slope and surface materials of entrance ways should be provided to support adaptability, safety, comfort, diversity and autonomy in use. The location of a ideally measured ramp that is placed near to main entrances, creates dignity in use.

- **Pedestrian Routes:**

Pedestrian route development requires a strategic approach that must involve critical links on a "trip chain model". An inclusive pedestrian realm could be achieved by considering continuity of circulation ways in different movement zones of urban open spaces. The whole journey walking environment enables both able-bodied and disabled pedestrians to benefit from the urban open space as follows:

- Pedestrian can increase their ability to push or pull shopping carts, luggage and other wheeled devices.
- All pedestrians can select their trip experiences that suit their needs, skill level and desired experience.
- Parents can easily push their children in strollers
- Accessible business opportunities are provided to disabled people
- Disabled people can gain opportunities to social contact with their families and friends

- As able-bodied people, disabled people can benefit from many other facilities that urban open space serves.

All mentioned pedestrian routes below should be designed according to inclusive access principles:

i. Sidewalks and Pathways
ii. Curb Ramps
iii. Ramps
iv. Pedestrian Crossing.

i. Sidewalks and Pathways: Sidewalks and pathways are the backbones of the pedestrian transportation and they should be suitably designed for the use of people. The absence of any sidewalks along the street most probably creates utilization problems for pedestrians. Therefore; urban open spaces must be designed with accessible routes and the main planning principle have to be provide clear, obstruction free, continuous and wide sidewalks. Sidewalk width, gradient, surface material and grids are significant design considerations that have to be intended with the design of sidewalks in an ideal form.

-Sidewalk width: Sidewalks should have suitable width for access and both able-bodied and disabled users should have enough space for travelling and manoeuvring.

As pointed out by Kirschbaum et al. (2001, p.41) “the sidewalk corridor is the portion of the pedestrian system from the edge of the roadway to the edge of the right-of-way, side of streets and between street corners” and wide sidewalk corridors significantly enhance pedestrain networks. In order to achieve successful pedestrian networks the

needs of pedestrians should be prioritized. A zone system is an ideal form and it should be projected into sidewalk design. Sidewalk corridors have been divided into four distinct zones in the Portland Design Guide (1998, ed. in Kirschbaum et al., 2001).

1. Curb zone
2. Planter or furniture zone
3. Pedestrian zone
4. Frontage zone

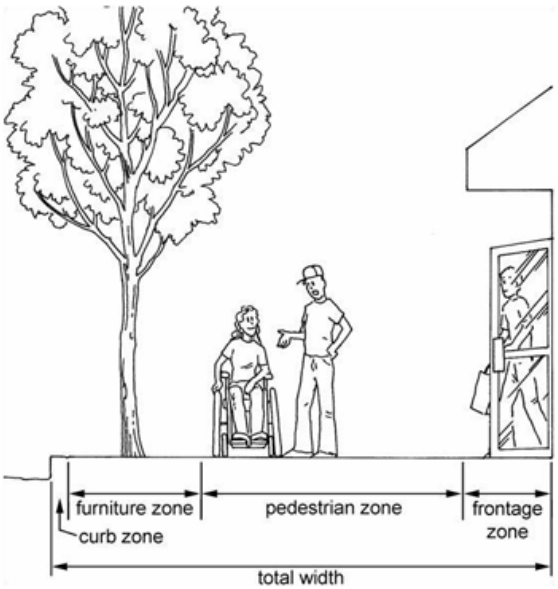


Figure 5.5: Four different sidewalks zones (Kirschbaum et al., 2001, p.41)

The curb zone is the first zone that is adjacent to the roadway. It is a central part of the drainage system that prevents an excess of water into the sidewalk corridor. The planter or furniture zone lies between the curb and pedestrian zones. The pedestrian amenities such as benches, bus shelters and other house utilities should be intended to design within this zone. The intention of street furnishing elements and public amenities in this zone will provide safety for pedestrians pedestrian zone that segregates pedestrians from vehicle lane with barriers. The pedestrian zone is

separated for pedestrian travel. It should be free to obstacles. The frontage zone is the area between the pedestrian zone and property line. The sidewalk width must be designed with an ideal distance for accessible use. The suitable standards belong to sidewalk width were given in Appendix A.

Some solutions are required to improve access on narrow sidewalks:

- to eliminate all removable (trash receptacles, newspaper stands) and permanent obstacles in the pedestrian zone that limit the clearance width of a sidewalk,
- to provide an additional right of way at driveway crossings and jogged landings,
- to secure additional right-of-way that allows periodic passages,
- to extend the curb into the parking lane that generates more space for curb ramps,
- to replace curb ramps and driveway crossings with parallel ramps,
- to take from the street width for creating more wider pedestrian zone (Kirschbaum et al., 2001).

-Gradient: Existing grade or cross slopes might create difficulties for some people with mobility impairments, because it is not easy to travel across slope surfaces. While using gradient, people with mobility difficulties require more energy than able-bodied pedestrians. Particularly, manual and powered wheelchair users might have difficulties controlling their balance on slope surfaces. Kirschbaum et al (2001) highlighted some practical solutions towards suitable gradient designs on sidewalks as following:

- Limiting the distance and placing periodic level landings between the segments of steep grades.

- If possible, it must be avoided from unavailable factors such as cross slope over 2 percent.
- Resting areas have to be intended to provide comfort.
- Handrails have to be placed for the safety of users.
- Location sign must be situated to inform users about sidewalk grade and other alternative routes with a lesser grade.

-Sidewalks surfaces: Improper design of sidewalk's surface may decrease the usability of sidewalks especially by the disabled. Several factors influence the usability of sidewalk surfaces:

- Surface material (firmness, stability and slip resistance)
- Changes in level
- Dimensions of gaps, grates, and openings (Kirschbaum et al., 2001).

Surface materials usually include concrete, asphalt, tile, stone or bricks. The surfaces have not excessive or undulate texture. Surface material should be firm, stable and also slip-resist. Firm and stable surfaces can resist deformation by indentation and movement of an object. Wet surfaces are difficult for all pedestrians, particularly for people who use wheelchairs or walking aids. A broom finish should be applied to the concrete surfaces for providing slip-resistant surfaces. A suitable drainage system has to be created to prevent water from settling on the sidewalk. It is required to a regular maintenance program to remove snow and add salt or sand to slippery sidewalk zones. It should be avoided from decorative paints and surfaces, such as polished stones or aggregate rock, because they are not slip-resistant.

Changes in level are related to vertical elevation differences between the adjacent surfaces. The reasons for level changes may varied such as; tree roots pushing up from beneath the pavement; heaving and settling on pavements by frost; fragile on brick surfaces and uneven transitions between streets, gutters and curb ramps.

Changes in levels might be negatively influenced the usability and accessibility of urban open spaces by people with mobility difficulties. While ambulatory pedestrians have problems for lifting their feet off the ground. Sudden changes in level can fail these user's trips. A person who uses wheeled devices as wheelchair or scooter might have difficulties by the abrupt level changes and they can catch their wheels on the sidewalks. If changes in level is greater than 12mm, curb ramp, ramp, elevator or platform lift should be provided for improving the usability of people who have mobility limitations.

Gratings and openings might create usage problem especially for people with physical disabilities as wheelchair users, cane or crutch users, parents with prams and person with heavy luggage. Manholes, drains and grating should be mainly situated at the outside of the pedestrian zone and they must be flushed with the pathway surface with narrow patterns of not more than 13mm. Gratings with perpendicular openings should be placed instead of those having elongated ones.

ii. Curb ramps: Curb ramps allow access between the different levels on pedestrian paths. They are essential elements of urban design and they play an important role in providing inclusive access for people who use wheeled forms of mobility such as wheelchair, scooter and pushchair.

Kircshbaum et al. (2001) evaluate curb ramps' utilisation by people with a different type of wheeled devices as manual, powered wheelchairs and powered scooters. Each type of technology will advantage from different aspects of the curb ramp design. While most powered mobility devices are manoeuvrable in small spaces in terms of their short wheelbase. Scooters have a longer wheelbase excluding manual steering and most of them carried out three-point turn in tight spaces. Manual wheelchairs can fit on their wheelbase and they have difficulties steering on a cross slope as they tend to turn downhill. It should be kept in mind that some people with mobility impairments could experiences some difficulties while using curb ramps.

In some situations, curb ramps can restrict access for cane and crutch users who need to lower their forward when going uphill slope. They require lifted higher and placed on the ground. The walking aid users must have the strenght to lift their body over the supporting device (Kirschbaum et al., 2001).

The existence of problematic design situations could be reasoned with difficulties in the use of sidewalks by people with mobility impairments. The slopes, dimensions and location of curb ramps have a significant role in the ability of the physically disabled person to travel sidewalks independently. Dimensions of accessible curb ramps were given in Appendix A.

iii. Ramps: If an accessible route has greater slope more than 1:20 should be considered with ramp. Inaccessible building entrances with level differences between indoor and outdoor surfaces, routes and inaccessible routes due to difference in level should be accommodated with ramps.

Figure 5.6: Level differences were considered with a ramp along the street, Auckland, New Zealand (personal archives)

Ramp width, slope, surface material, landing and handrails are significant design considerations for the intention of ramps in urban open spaces.

The ramp surfaces are critical for its use by a person, including those in wheelchairs, pregnant women and people with walking devices, during any type of weather. The smoother surfaces make the walk-life of physically disabled user's easier. But at the same time, it must also be rough to guarantee, non-slip surface for each user. Unsuitable grounded ramps may also create problems on the safety and comfort of users with mobility limitations. The ramp surface should have slip-resistant and hard material. It should be avoided from using carpets on the ramps. An adequate drainage system should be installed against the accumulation of water on the ramp surfaces (Heiss et al. 2010).

Ramp Landings are important design components that offer resting opportunities to users. They must provide enough space for people with wheeled devices to manoeuvre. The ramp landing has to be installed at the each 10.00m, at every change of direction

and at the top and the bottom of every ramp. Handrails are important elements of ramp design. The handrails should serve one or more four remedial functions:

- They are stabilizers while helping them maintain balance of users.
- They enable users to retain their balance.
- They can be locomotory aid by assisting users to raise their legs from one step to another.

It is essential to install adequate railing for providing safety and comfort for people with mobility impairments. The significant design considerations for the handrails are related to:

a) Handrail height
b) Handrail form
c) Handrail placement
d) Handrail texture.

a) Handrail height: The height to the top of a handrail should be available to all users and it should be placed in an ideal position above the surface of a ramp, the pitch line of a stair, and the surface of a landing.
b) Handrail form: Rounded forms which can be easily gripped, is recommended to facilitate the usability of handrails. It must be avoided from sharp edges for the safety of users; especially for wheelchair confined people. It is not recommended handrails that rotate within the fittings. Handrails should be slip-resistant (UN, 2004; UNNATI, 2004).

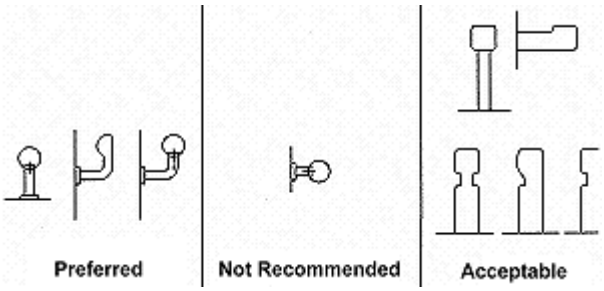


Figure 5.7: The situations of different handrail form in terms of their usability by physically impaired person (URL 4)

c) Handrail placement: Handrails should be carefully attached to the Wall for providing safety of users. In order to facilitate usability of handrails, especially by ambulant disabled person, they should be placed accurately and the accessible height of handrails must be mounted.
d) Handrail height: Wall-mounted handrails should be placed on walls with smooth surfaces for the safety of handrail users (Appendix A).

iv. Pedestrian Crossings: The pedestrian crossings can be explained "as any place where the pedestrian leaves the sidewalk and enters the roadway" (Kirschbaum et al, 2001, p.8-1). Pedestrians are at risks whenever they cross the roadway and the degree of risks based on the complexity of both vehicular and pedestrian way design. The existence of barriers at pedestrian crossings may create difficulties in usage especially for physically disabled pedestrians and these barriers could be classified into two main groups: movement barriers and information barriers.

Movement barriers restrict the person's ability to move along or in the sidewalks and crosswalk. The movement barriers that influence the mobility of the user, could be given such as;

- long crossing distances

- short signal timing
- medians or islands which not including ramps or cut-throughs
- curbs without curb ramps
- curb ramps without level landing
- improper design of pedestrian activated signal devices
- absence of information during the pedestrian signal phase (Kirschbaum et al., 2001).

Information barriers constraint the utilization by the reason of missing or absence of information about pedestrian crossings and these barriers negatively influence individual's ability to utilize information. The greatest information barriers at crossing points include;

- conditions that make it harder to recognize the boundary between the sidewalk and street
- blocked sight-lines
- signal devices which not include accessible information
- absence of information about pedestrian crossing location, direction or interval
- slip lanes and roundabouts which are not signalized
- unusual and straight-line geometry in the design of the intersection where the crossing location and correct direction of travel is not strong
- small signage or pedestrian signals at intersections with long crossing distances.

The dimensions and surface materials of pedestrian crossings are essential to design specifications that must be considered (Appendix A). Pedestrian crossings should be placed at each cross-roads. Preventative measure have to be considered against risks on hazards. Suitable button height at crossroads with signalization and firm, well-drained zebra-crossings are among the important measures of pedestrian crossing's design.

In order to provide more usable and accessible pedestrian crossings, some technical design solutions are needed:

-To install a median crossing for long distances

-To increase crossing times for people who walk slowly

-To reduce traffic speed

-To increase the visibility of curb extensions

-To maintain midblock signalized crossings for more accessible pedestrian crossings at busy intersections

-To place traffic and pedestrian signalization wherever not considered (Kirschbaum et al., 2001).

- **Open Space Facilities and Services**

Open space facilities and services include car parking, bus/transit stops, street furnishing elements as resting facilities, telephone booths, water fountains, ATMs, garbage bins, bollards and public toilets. Practicable design of open space facilities and services are welcomed to pedestrians and makes the urban open space comfortable. All facilities should be accessible and inclusive to the use of every people and they have to be carefully designed for improving their functionality.

i. Car Parking /Curb Parking: Insufficient parking facility is the most common problem that disabled people encounter in urban open spaces. The designated parking lots should have adequate space and an access aisle have to be intended to design especially for wheelchair users. Accessible car parking must be positioned as close as possible to the point of destination or have to be placed on the shortest accessible route of travel. Accessible parking facilities have to be considered on all type of parking surfaces. Segregated parking zones, curbside parking and drop-off zones must be suitably regulated to disabled people utilization.

Figure 5.8: Designated parking areas along the street, Auckland, New Zealand (personal archive)

Design specifications on accessible parking facilities are related to;

- the number of disabled designated parking facilities
- location of parking space
- dimensions of disabled parking lots
- surface material quality.

Curbside parking may create safety problems if it is not designed as an accessible drop-off zones. Drop-off areas are used for getting on or getting off user groups as parents with children, people carrying loads, etc. Drop-off zones must be considered at public transport stops as bus stop as well (Appendix A).

ii. Bus/Transit stops: The bus/transit stops' users are pedestrian riders. The designer must understand the ways of producing effective and efficient transit stops. The bus/transit stops are mainly isolated street corners that receive pedestrians waiting long periods (Reuter and Zegeer, 1994).

The meaning of 'bus stop' can be given as "a sign on a pole and a place for the bus." All bus/transit stops should be suitably arranged to use of every people, including disabled people. They should provide easy, independent and barrier-free access for disabled people. The location of bus stops must easy, graspable and visible from long distances. It must be avoided from the placement of information panels with sharp edges and corners. Street furniture, signage, curb heights and lighting are among the significant design elements of the bus/transit stops (Reuter and Zeeger, 1994, p.60).

The essential design guidances of bus/transit stops is related to arrangements of their location and layout (Appendix A). Achieve accessible public transportation is not only related to the design of bus/transit stops. If the driver does not stop at the right place, transportation facility of disabled pedestrian become useless. Accordingly; sensitiveness and behaviour of drivers have great importance for sustaining inclusive public transportation facilities.

iii. Street Furnishing Elements: Street furnishing elements include resting facilities, telephone booths, water fountains, ATMs, lighting elements and bollards. Street furnishings make places for resting, sitting and eating and social encounters with others. Such places can make great sense for the elderly, those with limited mobility and adults with small children (Mark et. al, 2007, p.365, Yücel, G.F, 2013, p.624). The street furnishing elements "should be designed and planned according to the user's needs. They should be available in proportion to the intensity of facilities in a particular place, and carefully positioned to create unobstructed paths for pedestrians without creating hazards" (Yücel, G.F., 2013, p.641).

The street furnishing elements of urban open spaces must be installed according to the needs of disabled user's. The selection and arrangement of street furnishing elements have the effect of drawing people together (Yücel, 2013, p.625). The significant urban design considerations have to be taken into account to promote more functional street furnishing elements in urban open spaces:

- the number of street furnishing elements should be set up based on the analysis of the site's capacity and intensity of use.
- location of street furnishing elements and facilities must be based on their functions and coherent with the design of hard surfaces. The furniture should not be hazardous and they should be placed along or near the main accessible pathway and they should be placed in the landscape strips against probable hazards.
- dimensions of street furnishing elements must be available to use of diverse people including people with mobility difficulties (Appendix A).

-Resting facilities include sitting elements, such as benches which must be integrated within the urban open spaces wherever people expect, meet or socialize. Level rest areas are beneficial to users who have mobility limitations. Resting facilities should be arranged outside the main travel path, pedestrian crossings, in front of building entrances. Resting elements should be placed at regular intervals along the pathway. Armrest and back support are significant features of resting elements and they provide assistance and more comfortable use to elderly and pregnant women. It is required to place some resting facilities close to public toilets and telephone booths for users with disabilities.

Figure 5.9: The sitting element in Groningen City Centre, Netherland (URL 5)

-Telephone Booths: The public telephone booths must be equipped for the use of every people including those with wheelchairs. The doors of telephone booths should be easy to open. For wheelchair user and short people low telephone counter should be situated with ideal dimensions and “a tray is provided hold the handset when depositing coins and dialing” (URL 6). The booth should also be furnished with a handrail to offer “easy access, a mirror to see behind the wheelchair, and a pull-strap for opening and closing the doors. The interior floor space is three times larger than

that ordinary booths" (URL 6). The location of accessible telephone booths should be indicated by signs.

Figure 5.10: A sample of an accessible telephone booths (URL 6)

-Water/Drinking Fountains**:** In urban outdoors, water/drinking fountains offer a focal point. The drinking fountains should be accessible for functional purposes especially in regions where there are hot summers and they should be designed on a suitable scale to their setting. The drinking fountains should be accessible and usable to wheelchair users, children, standing adults including those with walking aids and water control should be simple with little strength required (Yücel, 2013, p.636).

Figure 5.11: Drinking fountains are accessible to all users (URL 7)

-Automated Teller Machines (ATMs): In order to provide inclusive ATMs, the legislation should be regulated as a compulsory responsibility of the banks. The ATMs must have a clear floor and ground surface which is stable, firm and slip-resistant. The machines should have operable parts for the use of people with disabilities. Wheelchair confined individuals must have access to a headphone jack. Display screen has to be visible to all people use.

Figure 5.12: Accessible ATM in Korea (URL 8)

-Lighting Elements: The lighting elements could be intended to design for different purposes “such as wayfinding, creating social spaces, interacting with the natural and built environments, and meeting security requirements; the overall design must enable

all functions to coexist experience for users" (Ramsey et. al, 2011, p.358; Yücel, 2013). The lighting elements should be organized with other streetscape elements. The location of lighting elements is significant in providing safety for people. Especially hazardous places as stairways, ramps, crosswalks must be well- illuminated.

-Garbage bins**:** The garbage bins should be placed to "visible and accessible locations in order to minimize littering" (Yücel, 2013, p.629). They should be placed where they are most likely to be used, like busy intersections, near to pedestrian crossings, building entrances and bus stops (Kathy, 1987, Yücel, 2013). The number of garbage bins should be provided depends on how many people use a space and how much litter is produced in the space. The other significant quality of good garbage bins is ease of use and "people should be able to dispose of waste without having to touch the receptacle or open a door to use it" and so trash cans are more accessible forms of garbage bins (Department of Transport, 2011, p.88,89,191,192, Yücel, 2013, p.630). Well-organized urban open spaces possess some smaller bins that are regularly emptied (Yücel, 2013). The ideal position of garbage bins include their attached forms to lampposts that do not obstruct pedestrian flow.

-Bollards: The bollards are barriers and boundary makers which are generally designed to guide traffic and protect pedestrians from the vehicle intrusions. Throughout history; bollards are used for diverse purposes as visual barriers, physical protection installs, decorative ornamentation items and other specialized applications. But they are extremely installed to create barriers that assists to manage vehicle traffic and protect pedestrians, buildings and landscapes.

Figure 5.13: Bollards provide safety at street corner (URL 10)

Figure 5.14: Safety bollards along the street segregate pedestrians and vehicles (URL 11)

Figure 5.15: Decorative bollards were designed in urban open space (URL 12)

Figure 5.16: Lighting bollards sustain both functional and aesthetic quality in urban open space (URL 13)

iv. Public toilets: The public toilets and restrooms may impede people with physical disabilities, due to the existence of inappropriate stalls that do not fit their usage. In order to achieve inclusive access in urban open spaces; public toilet facilities have to be available for people with mobility limitations. The location and use of toilet facilities have important design notions. The public toilets must be located on the ground level with suitable, comfortable and graspable entrances. Accessible lavatory facilities and toilet compartments should be installed for the use of people with disabilities (Appendix A).

Figure 5.17: Accessible public toilet was designed by Tadao Ando in Tokyo (URL 14)

v. Signage: Poor signage is the source of legibility problems. The installation of suitable signage prevents orientation difficulties and pedestrian accidents. While the signages inform to users about accessible routes and facilities, they provide comfortable use in urban open spaces. The signage includes direction signs, locality signs, street names and numbering, information signs, location maps, i.e.

The legibility of signages is influenced by diverse factors such as lettering sizes, sign height to the eye level, the horizontal distance between the observer and object and sign angle to the wall or column (Heiss et al, 2010). All type of signs should be accordingly intended to design in a clear, visible and simple form. It should be understandable during the day and night time. It must be avoided from placing signage behind glass surfaces against any reflection. In general, accessible spaces and facilities are marked with international symbol and the shapes of signboards are changed in terms of type of the signage. In an urban open space, the necessary signages to inclusive access could be classified into different types according to their functional purposes:

i. Information signs

ii. Direction signs

iii. Warning (safety) signs.

i. Information signs inform users about the site and they guided users about places of their interest. These signs generally involve location signs and maps and they are internationally specified in rectangular shape signboards.

ii. Direction signs: This kind of signs are generally assisted to the user's and make their destination points available with arrow marks aiding the text.

iii. Warning signs: The warning signs are the most important signs for creating a barrier-free built environment for disabled people usage and they assist to improve inclusive access that provides more safe urban space facilities. The warning signs are indicated in triangular shape signboards.

Signs should be installed in clear, visible and appropriate positions. The illustrative quality of each signs based on the intensity of a message and it must be universally compatible to avoid ambiguity.

- **Social Environmental Features**

The social environmental features include socio-politic, socio-cultural and socio-economic features. In addition to the sufficient progress in the provision of a physical environment, it is also required to improve social environmental quality and performance to achieve inclusive access in urban open spaces. The suitable regulations on social environmental features have been explained in the following lines.

- Socio-politic Features:

Socio-politic features are related to regulations on maintenance and management of urban open spaces. The role of public sector is further than that of "controlling" or

"guiding" design and development. A wide range of statutory and non-statutory functions affect the urban open space quality and the uses as well. Accordingly; the public sector is a significant contributor to inclusive access (Carmona et al, 2003).

The socio-politic features that influence inclusive access could be classified such as:
i. Maintenance of urban open spaces: Well-maintained public realm increases the functionality of urban open spaces, particularly for those at risks with their limited mobility. The continuous maintenance helps to restore dynamic mobility of users and unhindered pedestrian circulation that ensure a certain degree of safety and comfort for both able-bodied and disabled users.

To sustain inclusive access necessitates the maintenance of accessible design features within operable working conditions for the use of disabled people. According to Kirschbaum et al (2001) the maintenance strategies must be incorporated into preliminary planning stages of both new construction and alternations. The extent and frequency of maintenance schedules could be varied depending on the location, usage quantity and availability of resources. Accordingly, a frequency of maintenance activities should be initially reported in a specific regulation schedule and they have to comply with local agencies to make required improvements on maintenance.

On the other hand; routine maintenance is essential to establish and sustain the long-term effects of inclusive access. Poor maintenance of facilities precipitate problems related to usage and safety risks, especially for disabled and elderly users. Bannert and Elnokaly (2013) exemplified some of the important features that are related to poor maintenance of urban open spaces; overgrown vegetations, unexpected dips, obstructions, pavements uplifted or broken by tree roots, cracked concrete slabs at

pedestrian crossings, fallen tree leaves on walking surfaces and spalled pedestrian surfaces. Local authorities have to take more responsibility for procuring and maintaining higher quality in urban open spaces.

ii. Management of urban open spaces: The proper laws and regulations on environmental management are essential to promote inclusive access and they can encourage to use of urban open spaces. The laws and regulations related to built environment design, planning and control which are determined by governmental and local authorities directly influence the user`s behaviour. If these laws and regulations neglect disabled user's needs, the segregated form of urban open space excludes people with disabilities.

In addition to regulating day-to-day management activities, public authorities have to intentionally secure and control public space facilities. Urban open space management is directly related to the control process. A range of statutory powers and legislation is essential for providing inclusive access.

Traffic management, transportation management and parking control are among the significant actions which have to be performed for promoting access and inclusion in urban open spaces. If the behaviour of a private sector have to be routinely controlled and unexpected actions of business owners and staffs can be hindered and regulated by the local authorities.

- **Socio-cultural Features**

Physical architecture has also an impacts on the creation of psychological forms in people mind. "Within a society individuals learn social attitudes from one another.

Individual thoughts merge into a collective consiousness, displaying hard behaviour at an unconsious level" (Bannert and Elnokaly, 2013).

Disrespectful behaviour of able-bodied people generates environmental pressure for disabled people in some situations: the excellent dropped curbs are blocked by able-bodied person's car, the designated accessible parking placed is used by able-bodied driver or the well-equipped accessible buses has an impolite driver.

Incoherent reactions of able-bodied society pave the way for environmental constraints which hinder the use of urban outdoor's facilities by disabled people. While the physical barriers break down, socio-cultural norms and prejudices would be changed.

- Socio-economic Features:

The socio-economic position of users plays an important role in shaping the urban space. The behaviour in urban open space is influenced by the socio-economic status of people that is based on income, education and occupation (Gottdiener and Hutchison, 2000). The economic value of a facility or function affects user`s choices, especially ones who are unemployed. As disabled people are characterized as unskilled and experience employment problems, they may be disadvantaged by the unaffordable and expensive prices of urban open space activities. Therefore; the economic value of a facility creates a substantial effect on the formation of inclusive access in urban open spaces. All of the facilities are related to transportation facilities, eating and drinking, selling products should be affordable for a wide range of user groups in urban open spaces.

5.1.3 User's Behaviour in an Urban Open Space

During the occupancy process, existing components of urban open space have an effect on the user's behaviour. The evaluation of function in urban open space requires making a comparison between the individual behaviour setting and existing value system on a function (Figure 5.18).

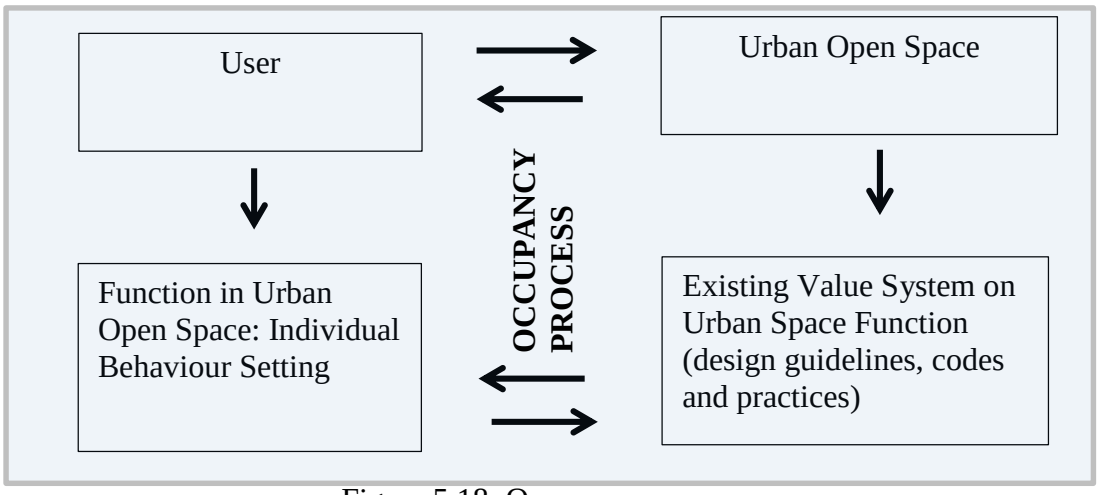


Figure 5.18: Occupancy process

The individual behaviour setting is actually a complex process. Before, the application of post-occupancy evaluation, individual behaviour setting should be well-defined by the researchers. Individual behaviour setting can be clarified over interactive physical and individual activities; physical activity, consideration and concentration levels, social structure of function, flow of function and social interactions.

i. Physical activity, consideration, routine and concentration levels: The physical activity, consideration and concentration levels are related to efforts spent for a function.

Physical activity levels concern the physical power of the users. It includes gross motor skills such as mobility characterization, the capability of user's hands, arms and legs (Gür, 1996). The physical activity level of people with disabilities is directly related to the type, severity, duration of their impairment. The physical activity level is also influenced by socio-demographic features as gender and age. For instance; if urban space user is a woman, she might need much effort for physical activity than a man user.

The consideration level is related to perform a function that needs some consideration. The consideration level refers to the type and intensity of consideration that needs to be spent in the task performance for a required function (Gür, 1996). It concerns users' ability on problem solution and decision making while using the built environment. For example; the expected function could be reachable when accessible features are understood by signages.

The routine level is the level of repetition in the execution of a functional task.

The concentration level includes the kind of attention expected from the user in the performance of the functional task such as pedestrian crossings with signalization, it is expected from disabled person to press the button for crossing the street.

ii. Social Structure of function includes roles, type of user groups, functional interaction between users, communication links. In order to identify the social structure of function questions should be raised:

- Which group belong to the user who performed the activity (oppressed/dominant)?

- How is the functional interaction between the user and others?
- What is the behaviour that occurs between the user and others during the functional task?
- What is the objective and frequency of communication between the user and others?

iii. Flow of function: Functional flow depends on public structure and activities. The existing physical setting should provide continuity in a functional task (Gür, 1996). It should be kept in mind that inclusive access entails considering about whole journey environment. All aspects of the built environment as a pedestrian street system, public transportation facilities and public services should be accessible and usable to users. If a function has any rupture or it is not seamless; the level of functional performance can negatively influence.

From the disability point of view; the movement patterns should be arranged to provide more functional flow. Gant (1997, p.723) highlighted on three significant aspects which increase movement capability of disabled people in the urban centre: Existence of accessible private transport features, inclusive facilities to travel by foot and accessible services to people who starts their travel by using public transportation facilities and at the end completed their travels as pedestrians.

In addition to these; this list can be extended with the other theme; 'accessible public toilet design'; directly affects travel behaviour and functional flow of people with mobility restrictions. Accordingly; functional flow can be achieved with high quality pedestrian environment for those who suffer mobility impairment. The pedestrian

environment should allow functional changes or displacements, the inclusive design policies require identification of mobility experiences in all aspects of the built environment; both macro-elements (land use planning, transportation facilities) and micro-elements (sidewalks, street furnishing, public services as toilets, car parking etc) of urban design must be identified for the modelling and development of inclusion.

iv. Social Interactions: Face to face relations which are comprised from both of necessary and coincidental functional interactions of all users (Gür, 1996). When users are performing for a functional task in urban open spaces, they sometimes experience conflicts with others. This kind of relations might disturb and even hinder them. For instances; if drivers parked their vehicles on sidewalks and curb ramps, inhibit pedestrian users that user conflict occurs.

5.1.4 Existing Value System on Urban Open Space Function

Existing value system on urban open space function is related to urban design guidelines, standards, codes and practices. Applying only fixed environmental standards might create difficulties and negative experiences for users. The necessary step contains critical judgement on inclusion to problem solving and take measure with a systematic evaluation of occupied settings through users' perspectives. The coherent urban design method will be hence usefull rather than just applying standards on accessibility and inclusion. The development of an inclusive access checklist for evaluation will support more coherent tool to analysis inclusion of users.

Evan (2010) pointed out that efforts are needed to fill the gap in knowledge, design guidances and toolkits to measure inclusive access at a functional level and to guide facilities to meet disabled access through urban open space planning arrangements. In

such guidances, ‘the hierarchy of need’ should support pedestrian’s need at the top. Besides; design guidances must refer to all practices; new-building, infilling and refurbishing of the existing environment. Weak community involvement in the formation of design guidelines and toolkits can lead to deterioration in the functional quality of urban open spaces for use by both able-bodied and disabled people. Design standards and guidance should be developed for the universal population, regardless user abilities. Heiss et al (2010, p.17) writes on the importance of standardisation as:

> Codes of practice and standardised sizes are extremely helpful for planning activities because they formulate the design conditions exactly and hence define generally acknowledged princibles. But they are therefore also imply the restrictions on the options that can be implemented.

It is also significant to decide which standards accomodate the needs of individuals. Standards of each country could be changable in terms of norms and cultural variations. As outlined by Rapoport and Watson (1972; ed. in Steinfield and Danford, 1999) standards are not based on solely antropometrics. “Different cultures and subcultures hold different beliefs about the tolerances between between body size and body movements and the space envelopes in which they occur and the postures that are suitable to specific activities”.

From the disability point of view; the United Nations` sends a signal to the World countries for the strengthening of the rights of the more than 600 million people with disabilities and two-thirds of those people lived in so-called developed nations. Across the World, more than 2000 standards were just drawn for physically disabled people, but each of these standards will not be given in this thesis, only standards related to urban design were reviewed.

Inclusive-access planning concepts have to always be considered in the field of different interventions. They must be introduced for building architecture, public thoughfares and transportation planning. Standards have to be valid for all kind of open space design; streets, squares, parks, circulation areas, gardens and recreational areas for the urban design practices. They could also be available to new works and applies similarly to conversions, modernisation and changes of use. The functional quality requirements should be intended those standards and design codes as well.

5.2 Evaluation Process

The evaluation helps to clarify the situation of a function and behaviour in an urban open space. Since the systematic evaluation of urban context gives extra dimension to the quality and performance of a functional task, the framework of evaluation process can be also explained in logical steps:

1. Defining the objective structure of urban open space: The first step basically includes the determination of expected behaviour from the space. The expected behaviour might be varied according to different users. In this study; inclusive access is the main objective that is expected from urban open space and it is the basic demand of all permanent, temporary (experimental) and random (coincidental) users.
2. The determination of expected functional quality or performance indicators: The second step is related to the identification of key quality or performance indicators that would provide qualified and quantified data to the measure inclusive access in urban open spaces.
3. The completion of optimization between functional quality or performance indicators and urban design features: The optimization is necessary against possible contradictions and erroneous situations that may negatively affect the

evaluation. The optimization helps to provide the necessary framework on assessment and shows the links between the performance or quality indicators and urban design features.

4. Identification of critical performance statements for an assessment: This is a step that demonstrates the initial attempts to prepare observational POE methods, the interviews and questions, and their analysis. The critical performance statements could be qualitative and quantitative expressions that can be used for the measurement.
5. Testing for functional performance measurement: This step involves the application of the data collection methods in the research field. Previously defined performance statements are used for empirical testing.
6. Reviewing outcomes of functional performance measure: This step includes a comparison of functional performance measurement results with the existing behaviour system.
7. Evaluation and Synthesis: This step includes evaluation and synthesis of findings regarding physical and social environmental features. Evaluated and synthesized performance test results help to decide which indicators are not compliances to the expected behaviour system.

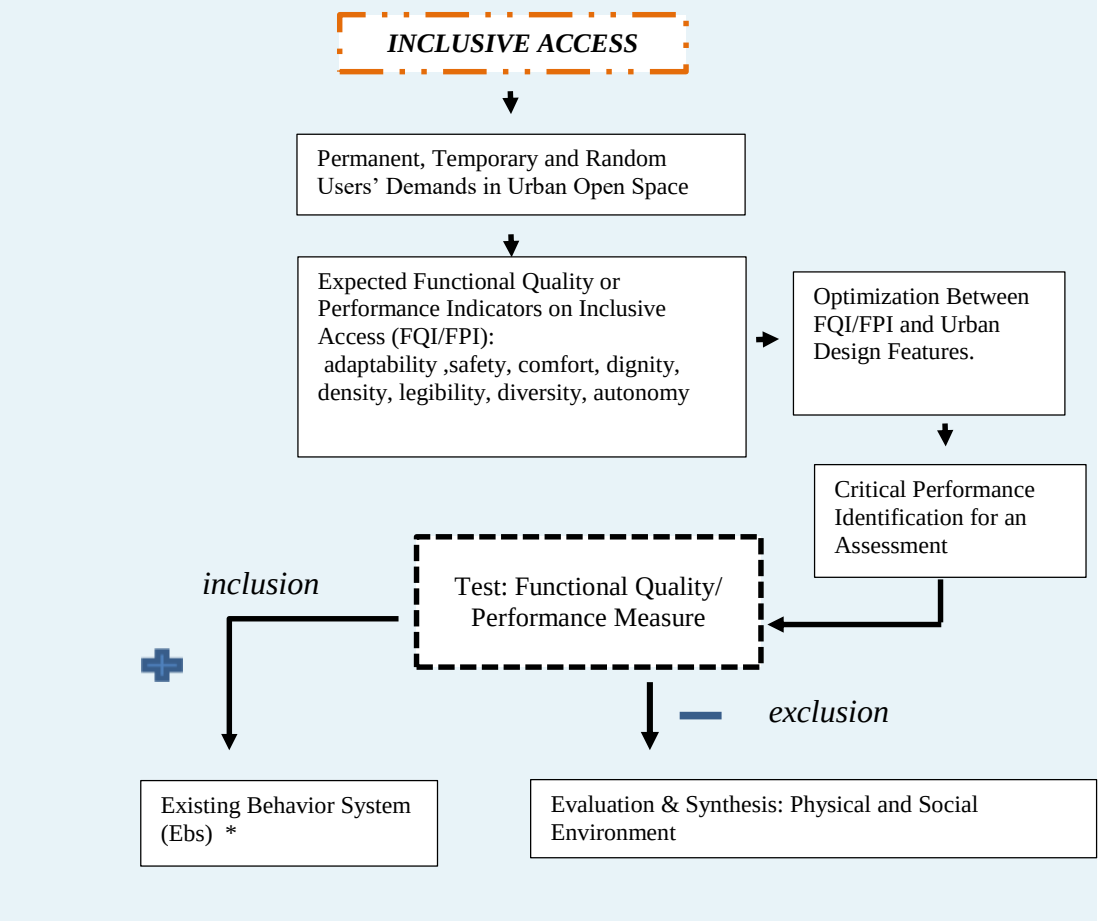


Figure 5.19**:** The Systematic framework of evaluation process (developed by researcher)

5.2.1 Inclusive access

Inclusive access is a chief quality, supports the needs of different behaviour patterns and it refers to design, planning and management of change to cater for every people regardless of age, ability and circumstance (Goodall, 2010, Hason, 2004). Establishing and sustaining inclusive access in urban open spaces depends on the provision of functionality that necessitate recovering maximal use. In this approach, design strategies have to address the environment-person fit design model, which not only implies enhancing a person's abilities, but also entails changing the environment with suitable arrangements that fit a broader range of capabilities (Tabbarah et al., 2001).

In order to provide more functional urban open spaces, the inclusive access indicators should address inclusive and accessible design principles and these principles must be supported with an ideal design standards and guidelines that enlighten planning authorities on necesary design statements to check suitability of planning proposals about all users' needs (Goodall et al. 2010).

In addition to these; the most important performance value expected from functional urban open spaces is that the inclusive access indicators are compatible with all permanent, temporary and random users' demands. The functional quality/performance indicators of inclusive access have been explained in the following lines.

5.2.2 Functional Quality/Performance Indicators (FQI/FPI) on Inclusive Access

The identification of key quality or performance indicators is a significant stage of performance measurements. Performance indicators provide qualified and quantified information that defines a set of values against to measure. The indicator selection is a way of arranging required data that gives a synoptic view of a situation or a component. The essential function of indicators is simplification, quantification and communication (OECD, 1997).

The following criteria demonstrate the required database on the selection of indicators:

i. Relevance: An indicator has to be suitable for the purposes of the evaluation. The indicator selection process must be established with the entire mental picture, values and goals articulated by the community.
ii. Accuracy: It is also focused on the issue that what indicator supports to measure.

iii. Importance: The measurement captures something that makes a difference in the evaluation program and also items which outcome critical for the evaluation.

iv. Usefulness: The outcomes have to underline information for improvement and development strategies and design programmes forward. The indicator must produce high quality data over a number of years. Necessary data should be available for a long time or it can be gathered for a single point in time.

v. Feasibility: ıt is required to indicator which would support to obtain data with reasonable and affordable effort. The indicator must be framed in a way that allows to access some value by a number, percentage or proportion.

vi. Credibility: The indicator has been suggested and used by leading experts or organizations such as WHO, UNAIDS, USAIDS and UNPA.

vii. Validity: The indicators must have a field for testing and they should be truly measurable by using methods. They have to be well-grounded and founded in fact.

viii. Distinctiveness: The indicators have to give unique value to measure and they do not evaluate something already captured under other indicators (Family Planning and Reproductive Health, 2017).

The effective functional quality indicators can be developed by drawing on two factors:

1. *Considering Existing Indicators:* The systematic literature review is enabled to identify existing indicators related to research objectives.
2. *Understanding the view of users*: It is not an easy process due to the existence of numerous different and conflicting views of individuals and groups. A range

of techniques can be used for capturing and understanding user needs (Gan et al, 2003).

The determination of necessary functional quality indicators is a complex process, both tangible and intangible assets can be selected on the basis of the goals of the evaluation. The functional quality and performance indicators are key indicators that are developed to measure inclusive access in urban open spaces. The indicators were created regarding particular requirements of urban open spaces in city centres that users having a range of mobility capabilities in terms of health, age and income level. The indicators were selected according to three step processes: defining objectives and keywords, making a literature review for keywords and selection of indicators (Figure 5.20).

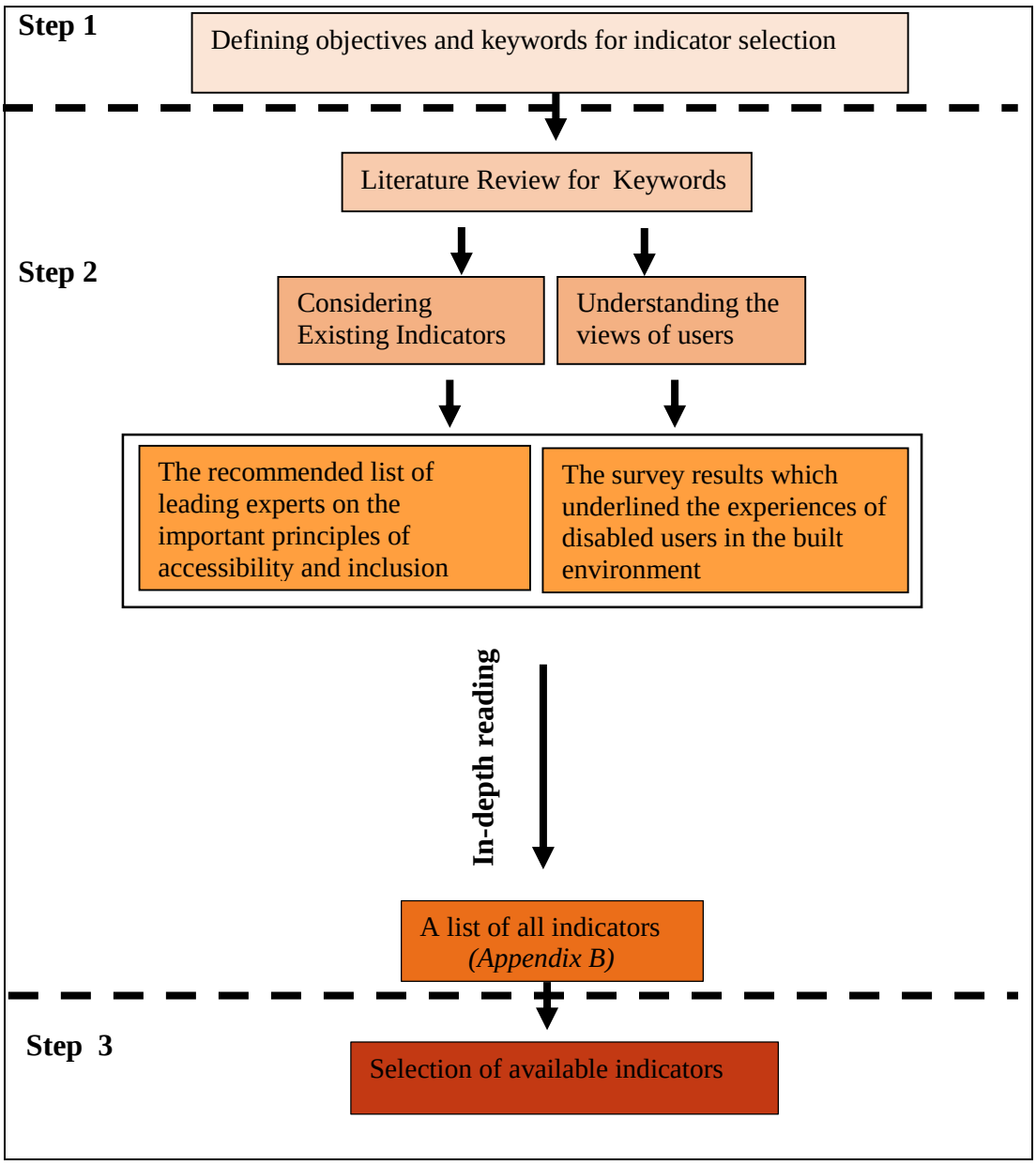


Figure 5.20: The indicator selection process

Selection of the key performance entailed time and thought for some critical issues that are starightforward and easy to measure. Engaging key stakeholders in the selection of key performance indicators help to ensure the validity of indicators and selected indicator must be useful, practical, adequate and culturally appropriate. Due to the time pressure, the functional performance or quality indicator were to be determined based on two sources:

i. the recommended list of leading experts on the important principles of accessibility and inclusion (Azemati et al., 2011, Mitchell et al., 2003, Ferguson, 1997)
ii. the survey results which underlined the experiences of disabled users in the built envionment (Bromley et al., 2006, Kitchin, 2000, Goldsmith, 1997).

Following the in-dept reading on literature review, all indicators which are related to the main objective have been listed (Appendix B). Then relevance indicators which address inclusive access needs of physically disabled people in city centres, were selected. Similar indicators were integrated against any duplication and related items were considered in a single indicator.

In order to develop effective indicators addressing inclusive access, it is significant to make a critical review of the previous studies. As mentioned by Ferguson (1997) it is impossible to restrain unique environmental needs of each type of disability, but safety, comfort, convenience, accessibility and control are prior needs of universal population. Environmental needs of elderly people are often similar to people with disabilities and they require environmental adaptation, mastery, choice, safety, comfort, convenience and accessibility. To provide safe, convenient, flexible and barrier-free physical environment depend on the sensitiveness of the designer.

Burton and Mitchell (2006) discuss the optimal design features for elderly people. Dementia-friendly urban outdoors must have six princibles; familiarity, legibility, distinctiveness, accessibility, comfort and safety. Azemati et al. (2011) evaluate inclusive access within the pedestrian network design and they argued about the significant indicators that makes traditional neighbourhoods accessible. Besides;

continuity, safety and comfort are basic principles for achieving accessible and inclusive pedestrian routes in the traditional neighbourhoods.

On the other hand; the indicators were also selected for the evaluation of disabled user's feelings and perceptions in the built environment. A disabled architect-Goldsmith (1997) has written on his feelings in all aspects of built environment, he underlined the importance of dignity in use which is one of the main indicators of accessibility. Safety, self-control and comfort are also other important design parameters of inclusive environment design.

In this POE model, the indicators were selected based on the mobility characterization and movement patterns that respond abilities of people with and without physical disabilities in urban open spaces of city centres.

Figure 5.21: Functional Quality/Performance Indicators (FQI/FPI) for inclusive access in urban open spaces

All selected indicators are also site specific and they were determined to measure inclusive access in urban centres and so they may not be available for other parts of the city. However, they can be easily modified in terms of the goals and objectives of other measurements.

Adaptability: The adaptability denotes to urban space that suits changing user needs. This indicator is one of the principles of inclusive design approach that proposes design solutions with distinctive features which can be easily adapted to the needs of every people and design accepts a wide range of individual preferences and abilities as well. Adaptability refers an environmental design objects that should be flexible to any change and has tolerance for errors (Wolfgang, 1997).

Environmental adaptation has been made to provide opportunities for mastery and choice. Planning for adaptation increases alternatives in use and offers variety in choice. Bentley et al (1985, p.27) mentioned that accessible places are just valuable since they offer experiential choice. “Variety of experience imply places that attracts varied people, at varied times, for varied reasons” and “ the purpose of promoting variety is to increase choice that depends on mobility: people who are highly mobile and can take advantage of a variety of activities even if these are spread over a wide area”.

The design should be introduced to the use of a wide range of users regarderless of their age, gender and abilities. The equal access opportunities must be democratically created for all types of physical impairments. From wheelchair confined person to parents with prams; all people who have physical impairments should easily use urban open space. Opportunities on a variety of choice enhanced feelings of users self-

control, privacy and territory in the built environment as well. Designers have to take into account the needs of disabled people as mainstream society. They should offer numerous alternatives by adding distinctive features that make the built environment more accessible and help users being capable or becoming fit with an ideal modification of an environment (Danko, 2013).

Safety: The safety is another indicator that is necessary for protecting users from potential hazards. Evan (2010) pointed out that responsibility belongs to the street or traffic engineer in the micro-scale urban environment. The safety could be provided with accident prevention across pedestrian crossings' design and car speed limitation perceived as a travel hazard that causes feelings of insecurity, anxiety and stress. The urban open spaces should be walkable and they must involve more pedestrian activity.

Suitable surface materials on pedestrian routes, appropriate ramp arrangement instead of stepped level differences, proper signage installation, appropriately placed streetscape amenities, sufficient lighting elements, suitable curp ramps are among some measures of safety (Azemati et al, 2011, Ferguson, 1997).

Comfort: It offers more suitable and ease of use for each individual. The level of comfort is actually a subjective experience and particularly based on a specific task that is achieved within a certain environmental condition. To accomplish inclusive access in urban open spaces sustains an increased level of comfort with appropriate anthropometric measures. Some comfort measures for urban open spaces involve pedestrian routes of suitable width, smooth and slip-resistance surfaces, appropriately designed and positioned street furnishing elements and properly dimensioned car parking (Azemati et al, 2011).

Dignity: The dignity is an indicator that allows disabled people to use the built environment in a similar way with a mainstream population. People with disabilities wish for more than affirmative design actions; they prefer to encounter a built environment that empowers universal participation that provides democratic use for every person regardless their abilities (Goldsmith 1997). Same routes, same facilities, same building entrances and same footway for both disabled and non-disabled users are among the important features of urban spaces that suggests dignity in use (Gümüş, 2008). The urban open spaces should be designed with the aim of improving dignity and self-respect of users by considering both physical and social aspects of inclusive access. Inclusive access could include rear accessible entrances to buildings, usable car-parking facilities, proper management services and affordable public space facilities.

Density: The density is related to the number of people per unit area. It might support both negative and positive effects on a person. According to Lozano (1990,p.163) "density determines accessibility of people to people, of people to work, of people to services and recreation; in short it allows urban relationships to flourish". High density creates various opportunities for transportation modes and pedestrian access to trains, subways and buses. It might be confused with crowding but they are different. While highly dense places can provide full opportunities for activities and social interaction, they may restrict some people from using those places. Therefore; "designer and planner must anticipate the effects of density on behaviour for specific users and their environmental conditions" (Stokols,1972; Windley and McClure, 2007, p.48).

Bromley et al. (2006) revealed that crowded pavements are one of the determinants of easy movement and a major challenge to over half of wheelchair users in city centre. Wheelchair users mainly prefer to apply avoidance tactics, using city centres during calm periods. However; avoidance produces physiological discomfort. Therefore; urban design and planning proposals should contribute to development of relevant design guidelines that comply with the density criterion. Suitable width of pedestrian routes and sufficient number of open space activities such as resting facilities, car parking lots and public toilets are among some means of arranging for density regulation.

Legibility: The legibility makes an urban space perceptually understandable (Lynch, 1960). Legible environments foster orientation, predictability and wayfinding in urban open space. A clear image allows people to move easily and quickly and find places where you wish to reach and useful for individual growth.

> a good environmental image gives its possessor an important sense of emotional security. A person can established harmonious relationships between himself/herself and the outside world. This is the observe of the fear that comes with disorientation; it means that sweet sense of home is strongest when home is not only familiar but distinctive as well (Lynch, 1960, p.4).

On the other hand; Mitchell and others (2003, p.618) advocated that legibility has an essential role in obtaining other qualities for the built environment; familiarity, distinctiveness, accessibility, comfort and safety. The legibility not only enables people to seek help or follow directions, but also reduces the psychological effects of spatial disorientation caused by illegible facilities. From the disabled person's point of view, the legibility is one of the significant design principles because it provides easy wayfinding, predictability of accessible and usable routes and forewarns of potential

hazards. Therefore; all signages have to be appropriately designed with regard to all users' activities (Mitchell et al, 2003).

Autonomy: The autonomy refers to choice and self-control, enables a person to independently access urban space activities. The high perception in control is a significant factor in preventing feelings of helplessness, both real and learned. According to Garber and Seligman (1981, ed in Ferguson, 1997, p.262) People with disabilities require to control themselves and they can function in the environment that possesses patterns of helplessness.

Autonomy is a performance indicator that ensures inclusive access in urban open spaces. Assistive environmental design techniques and solutions are required to confirm the freedom of users; otherwise people may require the accompaniment of a companion while using urban space and that is an undesirable result of urban design. If a person can use a built environment without anyone's help, they make more effort to access urban life (Gümüş, 2008, p.47).

5.2.3 Optimization Between Functional Quality/Performance Indicators and Urban Design Features

In human-space optimizations, individual and group expectations must be resolved in a balance. Ultimately, the organization of human-space interactions is determined as the spatial system, space functions, optimization of human and institutional behaviour, and space organizational paradigms that form the basis of thought play the most important role in this fiction. The optimization takes place within the broad conjuncture in which they take part (Gür, 1996).

Optimization is necessary for taking precautions against probable contradictions and mistakes during the performance assessment. In the POE model, the optimization has been done between performance indicators and urban design features of inclusive access. The broad consensus about optimal urban design features was completed for matching required indicator -adaptability, safety, comfort, dignity, density, legibility and autonomy- with physical and social environmental elements. The optimization helps to provide the necessary framework fort he assessment of inclusive access and it also assists to eliminate complex issues for the measurement. The optimization results are used to determine critical statements for the measurement.

5.2.4 Critical Performance Identification for an Assessment

Following the optimization process, the critical performance identification is a necessary step for the application of data gathering methods as questionnaires, interviews, observations, etc. (Zeisel, 1987). In order to evaluate functional performance, the critical performance statements which are derived from users needs, could be identified with qualitative or quantitative measures.

In POE, the performance statements have to include measurement criteria that are benchmarks of inclusive access requirements of urban open spaces. The measurement criteria can be a formula, a specific measurement (SF, inches) or a reference to a guideline or standard. The measurement criteria could be determined based on different sources;

i. technical standards which are mainly accepted as global benchmarks of accessibility requirements (UN, ADA and TSI standards),
ii. the significant urban design benchmarks which are emphasized in best practices design guides (UN, 2017; Kirschbaum et al, 2001).

During the critical performance identification, the standards can be reviewed for the development of benchmarks concerning physical environment evaluation, while design guide sources might be used for the identification of critical performance statements regarding the social environment.

The critical performance identification process was completed by considering the relationships of all functional quality/performance indicators with urban design features. The results of the detailed critical performance identification are concluded in the inclusive access indicator evaluation matrix which demonstrates measurement criteria that can be used for POE (Table 5.1).

Table 5.1: Inclusive access indicator evaluation matrix (modified from UN, ADA & TSI standarts; Kirschbaum et al., 20001; UN, 2017)

PERFORMANCE STATEMENT		PHYSICAL ENVIRONMENT			SOCIAL ENVIRONMENT		
		Building entrances **a) Entrance ways**	**Pedestrian routes** **a) Sidewalks** **b) Curb ramps** **c) Pedestrian crossing**	**Open space facilities and services** **a) Car parking** **b) Street furniture** **c) Public toilet** **d) Signage**	**Socio-politic features** **a) Maintenance** **b) Management**	**Socio-cultural features** **a)Behaviour of society**	**Socio-economic features** **a)Affordability of urban space facilities**
INCLUSIVE ACCESS INDICATOR	**Adaptability**	• Min. 120 cm width • Max. 5% (1:20) ramp slope • Non-slip and smooth surface material	• Min 150 cm width • Installation of curb ramps between the level differences. • Max. 2% transverse slope • Max. 5% longitudional slope	• 120 cm width access aisle between parking lots • Providing parking lots with min. 360 cm • ATMs' slot height 90cm and 120 cm • Public toilets have to located at the ground level. • Resting facilities with 120 cmx 120 cm	• Regular maintenance schedules • Regular car parking control •Regular private sector control • Public transportation planning and management	*	*
	Safety	• Non-slip surface material • Width of joint ≤ 10mm and deep of joint ≤ 5mm unfilled joints: Width of joint ≤ 2mm and deep of joint ≤ 5mm • Handrails, exists at both sides of a ramp segment, slip-resistant and easly gripped and mounted between 0.85m and 0.95 m	• Non-slip surface material • Width of joint ≤ 10mm and deep of joint ≤ 5mm unfilled joints: Width of joint ≤ 2mm and deep of joint ≤ 5mm • Drainage system are placed, outside the pathway or with perpendicular opennings	• Seats back from the main route with min.90 cm width • Parking lots width with min. 360 cm • 120 cm distance between the safety bollards	• Maintenance of pedestrian routes having cracked slabs, potholes, unexpected dips, overgrowth vegetation	*	*
	Comfort	• Min. 200 cm width • Max 5% slope	• Min. 200 cm width • Max 5% slope • non-slip and smooth surface material	• Resting facilities with 120 cmx 120 cm adjoining space • Seatings width 35-40cm and height 45 cm above floor level • Seating must be bracket 70 cm above floor level. • 95◦ and 100◦ angle between seating surface and backrests	• Regular maintenance schedules •Regular car parking control •Regular private sector control • Public transportation planning and management	*	*
	Dignity	• Accessible entrance design rear to main entrance.	• Intention of curb ramp and ramp for the all level changes.	• Location of street furnishing elements is accessible •Installation of designated car parking facilities. •Installation of accessible toilet facilties at the ground level. •Width-to height ratio of signages bewteen 1:5 to 1:10	• Regular maintenance schedules •Regular car parking control •Regular private sector control • Public transportation planning and management	• Public awareness on inclusive design policy and issues	• Charge of urban space facilities and services (public transportation, car parking, selling products, drinking or eating))are affordable.
	Density	• 180 cm width for retail streets. • 120 cm width for residential streets	• d=0,3 pedestrian/m2 for 150 cm width • d=0,5 pedestrian/m2 for 200 cm width	• Resting facilities between 100m and 200m (or 60 m available for high-activity areas) • Accessible parking facility should be provided for each 50 spaces. • At least one unisex accessible toilet cubicle • At least one accessible diaper changing facilities	*	*	*
	Legibility	*	*	• Providing signages with international symbols • Maps and information panels have height between 90 cm and 180 cm. • Width-to- height ratio between 1:5 and 1:10	*	*	*
	Autonomy	• Min. 120 cm width • Max 5% (1:20) ramp slope	• Min. 120 cm width • Max 5% (1:20) ramp slope	• Access aisle with 120 cm width between parking lots • Seats back from the main route with min. 90cm • Resting facilities with 120 cmx 120 cm adjoining space • Providing parking lots with min. 360 cm width • ATMs' slot have height between 90cm and 120 cm • Public toilets have to located at the ground level.	• Regular maintenance schedules •Regular car parking control •Regular private sector control • Public transportation planning and management	*	• Charge of urban space facilities and services (public transportation, car parking, selling products, drinking or eating) are affordable.

*The data is not applicable.

5.2.5 Functional Performance Measure

Functional performance measure is related to empirical testing by using defined performance statements. This is a necessary step that provides to designers look both backward and forward simultaneously. Zeisel (2006, p.33) argues that apraisals, refutations, criticism, judgements, comparisons, reflections, reviews, and confrontations are all types of tests. Following the presentation of an idea, designers step back with a critical eye and test their projects. “Design testing means comparing tentative presentations against an array of information like the designer`s and the client`s implicit images, explicit information about constraints or objectives degrees of internal design consistency and performance criteria . . . ”

It is not posible to provide any improvement without testing. Because testing is directly lead to assessment of good and bad points of a given hypothesis. Researhers have to initially describe exploratory hypothesis based on the theory and previous empirical data. Post-occupancy evaluation researhers must use preliminary investigation to resolve what specific data will they use to confront these hypothesis. The original hypothesis could be tested with collecting required data.

A measuring the impacts of environmental design on functional quality and performance is an essential step that requires multi-layered approach in a methodology. Inclusive access is not clearly evaluated through observed performance which is consist of only part of a total picture. An acceptable level of inclusive access depends on the individual interpretations and social behaviour. Hence; it is required to measure functional performance within statistical interpretations. Statistical definitions can clarify the boundaries of acceptable fit for the population at large.

The functional performance measure revolves around three significant factors. While the expectations of each users can vary, the observing performance value might change based on the individual skills, demands and existing environmental quality and performance of urban open space (Figure 5.22).

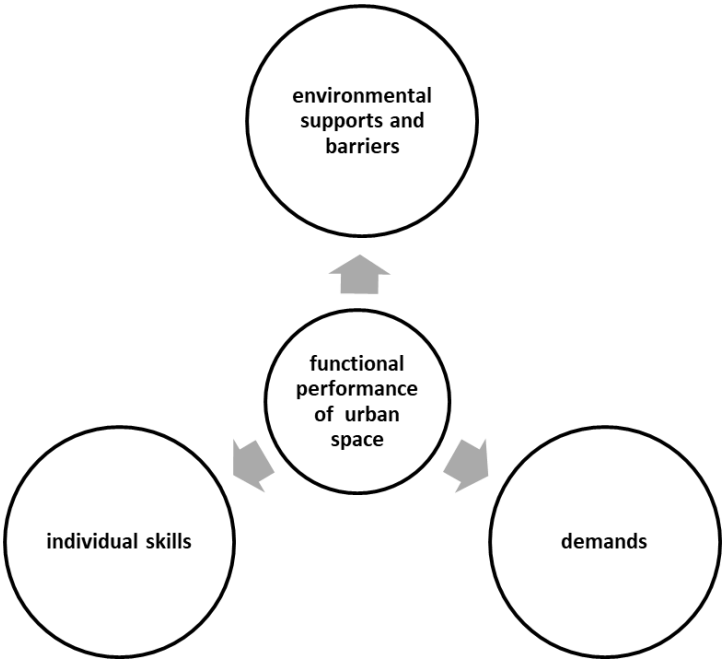


Figure 5.22: Dimensions of functional performance measure (modified from Law et al. 1996)

Research design must be carefully done by the selection of research problems based on the following issues:

- the way of problem definition
- researcher's expectation
- the nature of the object being studied
- the previous knowledge about the study.

Researchers can use a case study design when they want to develope intensive knowledge about a complex object, because the case studies refer to understand an object as a whole. The initial step of performance measurement is related to make decisions about the research methodology, using multiple research techniques are available to get sufficient and reliable data about different aspects of an object. The multiple techniques also enable investigators to perceive a special problem of users; as those with less mobility. In order to improve quality in functional performance measure, the research methods that increase researchers ability must be selected. According to Zeisel (2006) the using research methods that leads other people to critize research, enable investigator to learn from them. However, there are three quality criteria that are required by researchers to share methods of performance evaluations. intersubjectivity, reliability and validity.

- *Intersubjectivity:* The researchers need to define appropriate methods and so they judge another`s investigatory methods if they are applicable for the problem solving. The researchers assess consistency of methods with accepted theory and they must question about the efficiency of using another`s methods in their functional performance measurement.
- *Reliability:* "Reliable research methods would yield the same results if it could be used repeatedly in a situation that did not change at all" (Zeisel, 1996, p.121). Using multiple research methods can solve the problem of reliability, because it decreases possibility of falsely constant results. Gathering different kind of data about the same phenomenon with various techniques counterweights bias inherent in anyone technique with the biases of others and so the techniques must be "triangulation".

- *Validity:* It is also needed to validity tests to finalize real results such as making design decisions. There are several practical way of concurrent validity tests that compare results from one technique with the results of another ones.

i. ‘Predictive validity test compare results of one technique with’ another`s one that measures phenomenon (Zeisel, 2006, p. 123). For example; answers to functional performance measure questionnaires, might be expected to correlate with the amount of time that disabled users spend to settle in an urban open space.

ii. ‘Construct validity tests’ are based on the link between the results of a technique and a system of ‘theoretically related concepts’ (Zeisel, 2006, p.123). The technique measures considered part of a more comprehensive construct whose other parts in turn assumed to have been validly measured.

iii. Content validity test control ‘whether different parts of the same technique show the same results’. Content validity test is similar to reliability test for the internal consistency. If the results are not consistent, there is a problem (Zeisel, 2006, p.124).

In its simplest form, validity tests draw on the methods that examine what is needed to act on the world with desired results, if the reliability tests ascertain that researchers using and reusing a set of methods to obtain comparable data. Intersubjectivity save researchers to concentrate on a set of shared approaches and theories that means “they speak the same languages” (Zeisel, 2006, p.124).

As previously mentioned, post-occupancy evaluations could be carried out with diverse methods in general. However, a large amount of disability researchers focused

on the behavioural observations, focused interviews and questionnaires. As clarified by Zeisel (2006, p.99) "the link between disability and social isolation gave particular force to design proposals for barrier-free access to all communal areas" and observations of behaviour and physical traces and interviews point out that why disabled users are isolated in terms of both physical and social obstacles in an architectural spaces. In this part of a study, behavioural observations and questionnaires are only discussed, because they are selected research tools of this research.

i. Observing behaviour is the way of systematically watching people use their environments as individuals, pairs of people, small groups and large groups. Observing behaviour in urban open space produces data on user activities and also expected uses, new uses and misuses of a place and behavioural opportunities and constraints that environment provides. Zeisel (2006, p.192) draws on some practical steps that observers must be consider about them for observing environmental behaviour.

- **Qualities of the Method:** Observing behavior have being empathetic and direct, issued in dynamic events and let to researcher to vary their intrusiveness in a research setting.

- Empathetic: The researhers can observe individuals that almost immediately change feeling for the character of a state. Observation, paticularly participant observation, allows researcher to be on familiar with user, to understand small nuance differences from the users point of view. The reliability of observation have to be questioned while personal quirks of observers influence the recording of

observations. Although observing behaviour seems so easy and obvious. It may present problems. It is common for observers to describe in seductively authentic manner that mostly neglect the details and transfer untested feelings (Zeisel, 2006, p.193).

- Direct: If respondent find existing behaviour acceptable, they may hesitate to report real situation in a setting. Direct observation yields the authentic descriptions that do not omit to details for interpreting observations. Observers tend to report activity by perceiving relevant nuances and their personal research capabilities allow them to adjust and to understand particular setting. Direct observations help researcher to reach whole the picture of a real situation (Zeisel, 1996, p.193).
- Dynamic: The observer "get a glimpse of the role of a time in the life of an environment, as an example of a mother leanning from the window for calling her child and the child coming" (Zeisel, 2006, p.194). Sometimes it is possible to observe more complex chains of events of behaviour: `the efects of effects`. When researchers observe behaviour, they become aware of repetitive activities in identifiable places (Zeisel, 2006, p.194).
- Variably Intrusive: "The observer must select how far they will intrude and which social and physical vantage point they want to participate research" (Zeisel, 2006, p.196). They can decide to observe behaviour unobstrusively from a distance. But this selection possibly create problems, observing from a distance takes out the observer from the part of an action, depriving the method of a great part of its research potential. Close participation rises the chance of unexpected influences the observed situation. Selection of vantage point based on the different issues such as research problem, available time and investigator skills (Zeisel, 2006).

- Observers Vantage Points: The observers can choose their position as outsiders or participants in any situation. In outsider position, they may choose to be secret or recognized observers as participants, while in participants they may be either marginal or full.

- Secret Outsider: “The distant observer unobserved by participants in natural settings is a secret outsider” (Zeisel, 2006, p.197). When Moe (1973) choose this vantage point for observing of children`s play at elementary school in Berkeley, California. He recognized that being secret ousider and observing from distance is not a good situation to understand deepness of children activities and so he decided to be recognized outsider for catching some of dynamic attributes of his study.
- Recognized Outsider: The selection of this vantage point may alter users behaviour and this presents problem in the description of existing behaviour. The observer can exacerbate this problem by oversight. If observer starts visiting the site frequently, users can become familiar with the observer and they give up the idea of seen observer as a foreigner. They turn original status of their behaviour.
- Marginal Participant: The researcher can choose the vantage point that is commonly accepted and they became to be seen as an actual participant as just another patient in a hospital, student in a school, audiences in a concert hall. Marginal positions enable to observer being familiar with other users in observed setting. Familiarity however may produce problems that prevent observer to catch details and to find responses of the what is actually going on. As a marginal participant observer “must test their assumptions about how they are perceived by others” (Zeisel, 2006, p.198-199). Therefore they may need to slightly change their natural behavior to see how people in situation respond. There are different ways

of controlling unwanted side effects as choice of clothing, physical posture, and an object moved. In order to reach successful outcomes, participant observer have to be introspective and self-aware.

- Full Participant: The observer may prefer to employ situations which are already in and take role as a dominant user character in the setting when they are studying. In some situations, researchers are not able to select full participation as when all participants are highly skilled professionals as doctors in school or when membership in the setting being studied is restricted (men`s athletic club) (Zeisel, 2006, p.199).

- Recording devices: The recording devices of environmental behaviour may include notations, pre-coded checklists, maps and plans, photograps, videotapes and movies. The selection of required recording devices depends on the demanded detail from observation and the observer`s knowledge that already knows about behaviours to be observed.

- Notations: Recording behaviour in verbal and diagrammatic notes call that observers decide what to identify and what to overlook on the spot. For example, when explaining how disabled people use urban open space, the researcher must decide to record how disabled people interact with others and whether they move around, how they sit or use street furnishing elements or watch their surroundings. Each level of analysis is simplicitly valuable to design researchers for problem solving (Zeisel, 2006, p.200).

The notation forms could be prepared in a different way, but some following details have to be defined in each type of forms: observation date, observation period,

observation number. According to Gür (1996) notation schedules should be organized within the coordinate system. While x coordinates describe demographic characteristics of observed person and the setting of an activity, y coordinates have to be arranged for periodical codes of behaviour.

- Pre-coded checklists: The reseacher can use qualitative observation data to progress pre-coded checklists for counting and these checklists can used in either paper-and-pencil format and personal digital assistant (PDA) computer. During the recording, observer notes each activity on a checklists acording to ‘characteristics of participants (alone or in groups), place, time, and other relevant conditions such as the weather’. Setting up pre-coded checklists necessitate to make previous diagnostic observation, to organize how the demanded ‘data will be used and how to develop coding categories’ (Zeisel, 2006. p.202).
- Maps and Plans: If observer simultaneously require to observe and analyze several people in one general setting, recoding activities on floor plans, diagrams, or maps is an available. As stated by Zeisel (2006, p. 202) “looking at behavior recorded on a plan gives investigators a better sense of how a whole place is used at once than they would get looking at statistical tables”. Maps are also convenient to document sequence of behaviour in a setting. For example; observing behaviour of people who have a select of several paths as from home to bus stop, or from car parking to work. Analyzing map records gives an clues about the characteristics of popular paths.
- Photographs**:** The **‘**still photograps’ are useful to record subtleties that other methods may not available, such as the way someone sit on a bench or “the way of

two people avoid looking at each other" (Zeisel, 206, p.203). Environmental behavior can be recorded with illustrative quality of photographs.

- Videotapes and Movies: When time is an important element in an functional performance measure, videotape can be considered as a data-recording tool. Videotape records are generally prefered in disability studies to define the movement of disabled or older people in space.

- What to observe: Although observing environmental behaviour seen as a simple research technique, it is demanded more systematic approach in order to reach useful data for the analysis. Observing environmental behaviour allows designers to gain better insight into how people behave in the urban open space and how these people relate to or exclude other people. Designers can also control side effects of the design decisions by using environmental observation technique.

The significant elements of behaviour observation that must be considered before the application of a technique, have been given at the following lines (Zeisel, 2006, p.204).

- Who/Actor: The actor, which may be described in diverse ways, is the subject of a behavioral observation. 'Designers use research in a large projects to better understand similarities and differences among types of people'. For example urban designers must differenciate the needs of users as visitors, residents, employers. Individuals in observation hence are treated as representatives of a social group as primary, experimental and random users of an urban space. All those individuals can also be described in terms of their personal position and statues: age status, educational status, gender and so on.

- Doing What/Act: The observed user do something and an observer require to select the level of abstraction that is related to the way of behaviour description. The ideal level of description have to be choosen by observer depend on the design and research problem.
- With whom/significant others: The significant others are mainly important in disability studies that demonstrate side effects on relationships of actors. In some cases, especially in disability researches, the position, statute, attitudes of others have an important role in terms of the impacts on the main actors of a research. The researcher accordingly must observe on the behavior of other people as well. Especially, able bodied users attitudes against the disable people have to be observe for determining the level of inclusion.
- Relationships: The specific relationships between actors and significant others in a situation have to be described. The relationship must also described as "together" (family –parents and child) and "apart" (a person in any isolation) (Zeisel, 2006, p. 210).
- Context: The determination of context is particularly important in environmental design research. The context is related to situational and cultural screens which are constructed by the behaviour.

> *Situations* influence the meanning of people attribute to behavioural relationships. As an example of 'person sitting alone and apart from others' probably indicates that he/she wants to be left alone.
>
> *Cultural context* also effects 'how people interpret and react to behavioural relationships' and so it is important to record cultural context for behaviour when carrying out observational studies. In order

to analysis behaviour from cultural perspective observer must be avoid from the cultural biases and they have to interpret the behaviour with objective view (Brolin, 1972: Zeisel, 2006, p.210-211).

- Setting**: "**The meaning of behavior in particular setting based on the potential of the setting for use" (Zeisel, 2006, p.211). Understanding participant choices and possibilities to help observer effectively finalize research. Behavioral potentials of settings are related to objects that present options for use.

ii. Survey method is a sociology-based method that determines values, attitudes and behaviour. Standardized questionnaires, are survey instrument and they can be delivered by mail or telephone, are sometimes experienced by interviewers. Questionnaires directed in "person are also called scheduled interviews when interviewers are instructed to follow up certain questions with structured probes for depth" or specifity (Zeisel, 2006, p.257).

When, the researcher who will use the questionnaire method can define the problem and put the assumptions well, he/she has the chance to collect a lot of information and data with the questionnaire. However, in order to use this chance well, the researcher must fulfill some of the features of the questionnaire method, organize the questionnaire well, pre-coded the answers and know the question techniques that can be used in the questionnaire. Some significant features that researcher should take into account while prepearing the survey involve:

- Qualities: The quality of survey data is influenced by attention to detail that researchers employ to define the problems when they are studying. A well-designed survey has following features.

  - Control: It means fullfilling the survey and preventing misinterpretation. This can be best achieved by an interviewer applying the survey. Trying to keep the survey form to be posted compact usually pushes the researcher to short questions. In this way, researcher may encounter a situation of not getting good results.
  - Instrusiveness: There is a instrusiveness at one end of control. It is a prequisite for the interviewer to pretend to be insensitive to the subject. If the interviewer cannot remain insensitive to the subject, it may affect the subject.
  - Depth and precision: After applying some survey methods, the researcher may have to repeat the whole process when a very important question remains unanswered. In this respect, it may be better to get the respondents talking and catch clues than the survey requires. Pilot studies can be useful at this stage.
  - Persuasiveness: If the responder believes that the researcher's purpose is valuable and serious, the answers are given more seriously. In another sense, persuasiveness is the main goal of the survey method, it plans to collect data with quantitative rather than qualitative characteristics (Zeisel, 2006, p.257).

- Organization: It is firstly necessary to take care that the survey does not seem hostile, boring, confused and tiring to the respondends. The purpose of an interview must first be explained with an introductory. No one wants to help the researcher without knowing what benefit is expected. It is helpful to ask questions

requesting positive responses at first. Later requests can be provided for suggestions on improvements. Initial questions can request for general expressions as demographic information of respondends. If study takes longer than half an hour, it is necessary to divide the survey into sub-topics.

- Coding open-ended responses: When similar responses are grouped together, they make responses comparable to one another. Compiling and resolving closed-ended questions is not a complicated affair. However; in open-ended questions, the researcher has to document the answers and prepare them for enumeration and analysis. Three categories are essential for coding categories. They must be mutualy exclusive, exhaust all the possible types of responses and all be at the same conceptual level.

    a. Mutual exclusiveness: It "means that responses clearly fall into either one category or another" (Zeisel, 2006, p. 264).
    b. Exhaustiveness: There should be a category in which each possible answer can be placed.
    c. Single level of abstraction: Response categories should be conceptually paralel (Gür, 1996, p.193-194).

- Precoding Responses: Precoding is useful in open-ended questions and makes the survey time-consuming. Codes can be paralel and graduated. While, parallel precodes are called as nominals, graduated precodes are called ordinals.

    - Nominal: The nominal coding is the coding of objects by giving a descriptive name for a purpose, eg. hospital buildings, school buildings. The nomical codes

are useful to collect data, to suggest non-ranked choices to respondents, and to get attitudional data useful in a binary "yes" or "no" form (Zeisel, 2006, p.266).

- Ordinal: The ordinal codes are used to examine and group the directional density and other characteristics of attitudes and perceptions that can be verbally explained. The ordinal pre-coding is used for a variety of purposes.

  -Information; the ordinal pre-coding could be used to gather informations presenting "how much" or "how many"questions regarding age, income, size of household, or the number of clubs a respondent belongs to.

  -Attitudes: "The ordinal coding may also be useful for response categories following questions that respondents to judge the intensity of an attitude about a situation, person, object or setting" (Zeisel, 2006, p.266). For example; Likert attitude scale which includes group of statements for the determination of respondents' agreements and disagreements.

- Meaning: We show a certain semantic reaction to our environment and the objects that make it up. Semantic differential scales can be used to measure this response.

  - Visual Responses: Some cognitive, expressive, and perceptual information may be better stated visually rather than verbally. For instance; cognitive maps, base-map additions, drawings, photographs are taken by respondents and games.
  - Cognitive maps: The cognitive maps are mental pictures in which people find their places and directions by integrating their surroundings structurally. In fact, there was a very important assumption that mental images are identical with mental maps. Cognitive images are processes from two-dimensional

expressions on a paper. This is a lifelong process that an individual gets information about the relative location and qualities of their operational environment every day, encodes, storages and recognizes it again.

- Addition to base-maps: In this technique, the respondents are given simple basemaps and they are asked to add some indicators and ways in line with the questions. For example the paths they walked, the positions they took part in and the names they gave to places.
- Drawings: The mental images are sometimes expressed by drawing pictures. This technique has been evaluated by Sanoff and Barbour, but not numerically interpreted. It could have been more successful if it had been tried by precoding (Gür, 1996).
- Photographs: Lynch asked the respondents to select the photograph that best described the city in a bundle. This technique has been used to research and comment on the neighborhood imagination, such as taking a picture and bringing a picture of your neighborhood. This technique has not been sufficiently tried.
- Games: Diverse games have been developed in which the respondents convey their views by making dependent choices.

The survey method are useful if you know what you want to learn from people and if you want to discover regularities among people with particular characteristics. Used together with observation method, the survey is especially useful to gaher information about subjects such as people's perceptions, their attitudes, their values, and the meaning the environment holds for them.

5.2.6 Reviewing Outcomes of Functional Performance Measure

In order to prevent the problems that arise during application and use in design from being ignored and becoming chronic, review in a design theory and practice is interpreted as a purely final product of evaluation. As a process stage, evaluation includes post-occupancy evaluation which is the user-oriented method.

In recent years, POE has been increasing and it enables to generalize means to work on the many options of the position under study. Just as it is to scan multiple options in multiple dimensions, it is also possible to stand on a single dimension and examine multiple locations. The aim is not feasible in the long term use after the POE is the crypt with target detection feature opinions and criteria that can be applied without losing its validity (Gür, 1996).

However, it should be added that it is possible to evaluate the physical environment at different levels and dimensions. User responses, which are problem areas for the researcher, may not be purely behavioral. Physical environment can be analyzed in both physical and social dimensions. It is becoming increasingly important to consider the physical and social environment used, lived, tested and changed as an indispensable stage of the design process.

5.2.6.1 Existing Behaviour System (Ebs)

Following the functional performance measurement, the decision-making phase begins and then, the data obtained is compared with the expected behavior system from the urban open space. If the evaluation results give the existing behaviour system, this design is successful and complies with inclusive access criteria. The standards, codes

and norms that affect the formation of the urban open space support the behavioural values that user needs to perform the function.

Considering the proposed POE model of a study, it can be stated that the expectations of all users with and without disabilities coincide with the inclusive access indicators-adaptability, safety, comfort, dignity, density, legibility, diversity, autonomy. In this sense, it is sufficient to ensure the sustainability of the current environment.

5.2.6.2 Evaluation and Synthesis: Physical and Social Environment

The outcomes of research could be used to generate and test design ideas. If the present outcomes do not correspond to the existing behavioural system, there is a need for a revision at this point. Therefore; we should return back to the POE model to check answer of what are the expected behaviour opportunities from the urban open space in case of incompatibility determined between the existing behaviour system.

If the measurement results do not give the existing behaviour system, exclusion persist and this can be seen as evidence that there are problems that need to be evaluated and synthesized. Both physical and social aspects which influences the generation of inclusive access in urban open spaces have to be evaluated and synthesized in order to understand real situation of existing provision through the vision of occupants or users.

Creating an inventory of diagnosed problems is assisted researcher to produce a new list of requirements as a result of the examination, observation and experience that gives us the answer to the question. During the evaluation process, the researcher can even rank the detected problems according to their severity to make more sense. In the course of evaluation and synthesis, analyzes about the physical and social environment

system should be made. Analyzes made with correlation tables allow the factors affecting the performance of the physical and social environment to be compared within themselves.

At this stage, while evaluating the urban design elements one by one, it is also checked whether there are significant differences between the determined problems according to the user groups by using the correlation results. Accordingly, conducting a detailed problem scan prepares the ground for creating new design inputs.

5.3 Redesign: Strategies to Establish and Sustain Inclusive Access in Urban Open Space

After the systematic physical and social environmental evaluation, new strategies could be developed for redesigning of suitable urban open space which sustain inclusive access for people with and without disabilities. All evaluation results should be taken into consideration in order to develop effective strategies. In order for the strategies to be sustainable, design proposals are not developed by considering only the space scale but also the city scale.

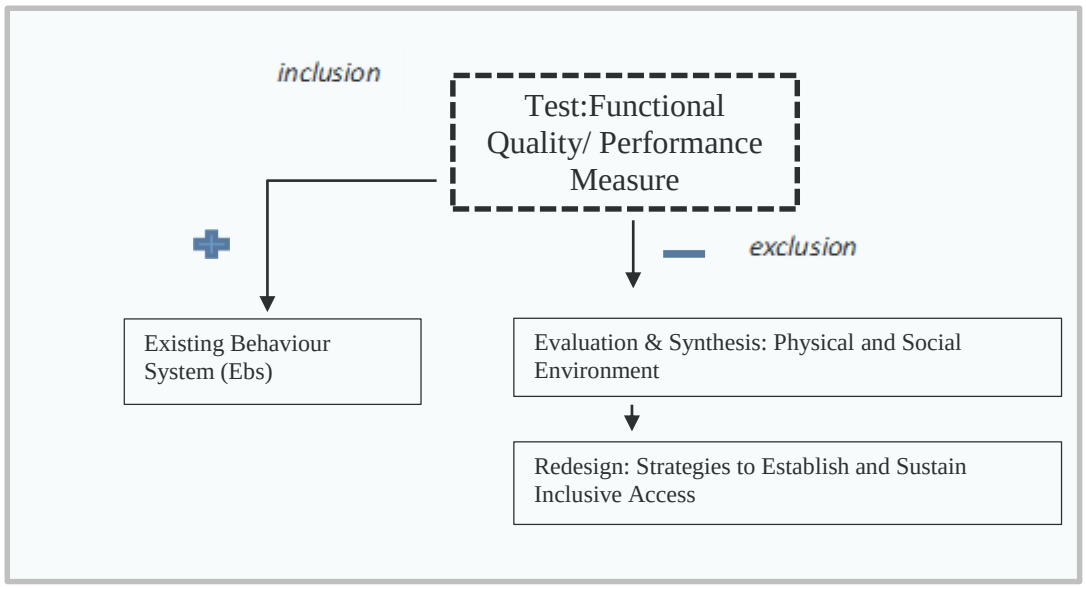
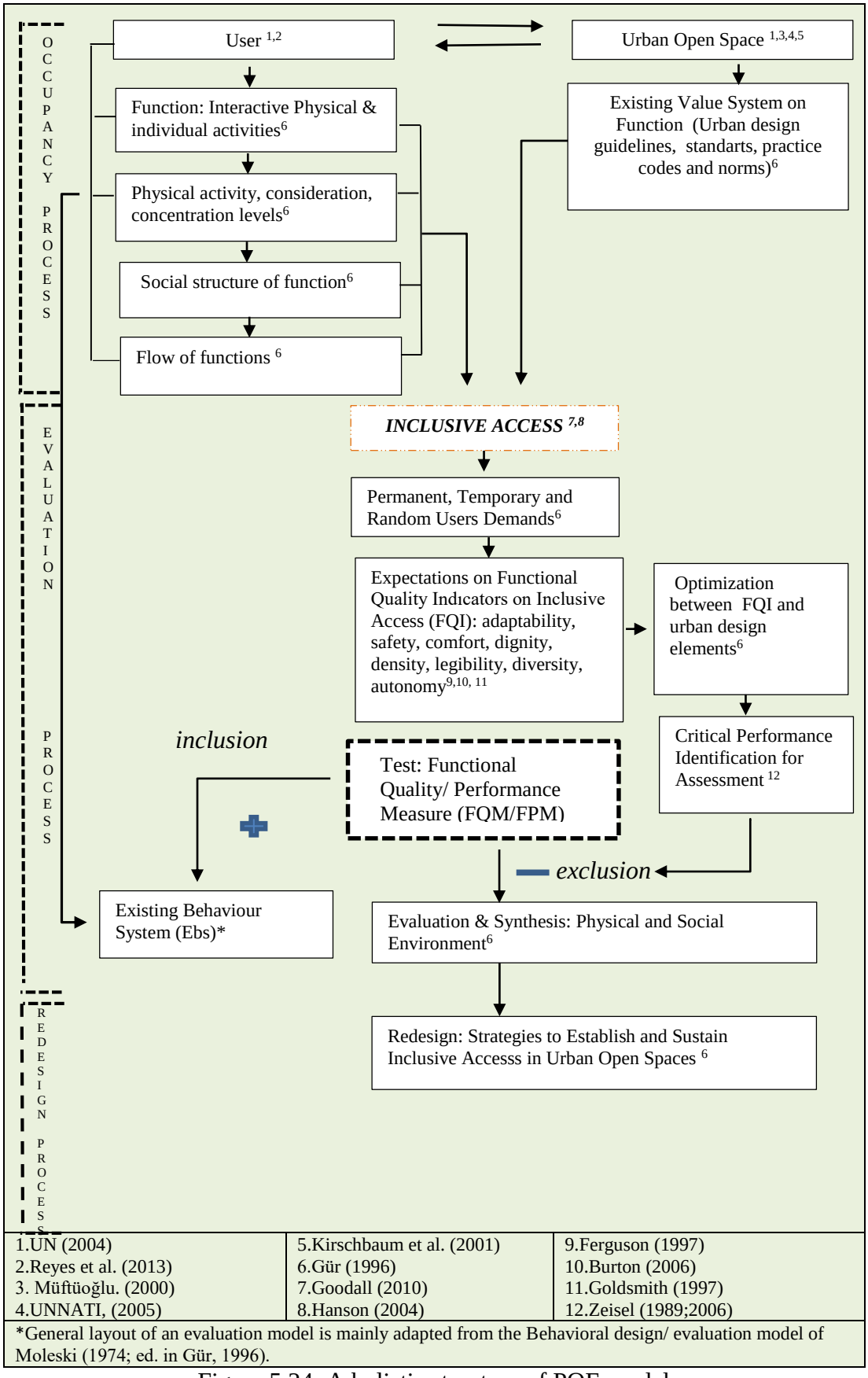


Figure 5.23: Redesign process together with the last steps of evaluation process (developed by researcher)

5.4 A Holistic Structure of Post-Occupancy Evaluation Model on Establishing and Sustaining Inclusive Access in Urban Open Spaces

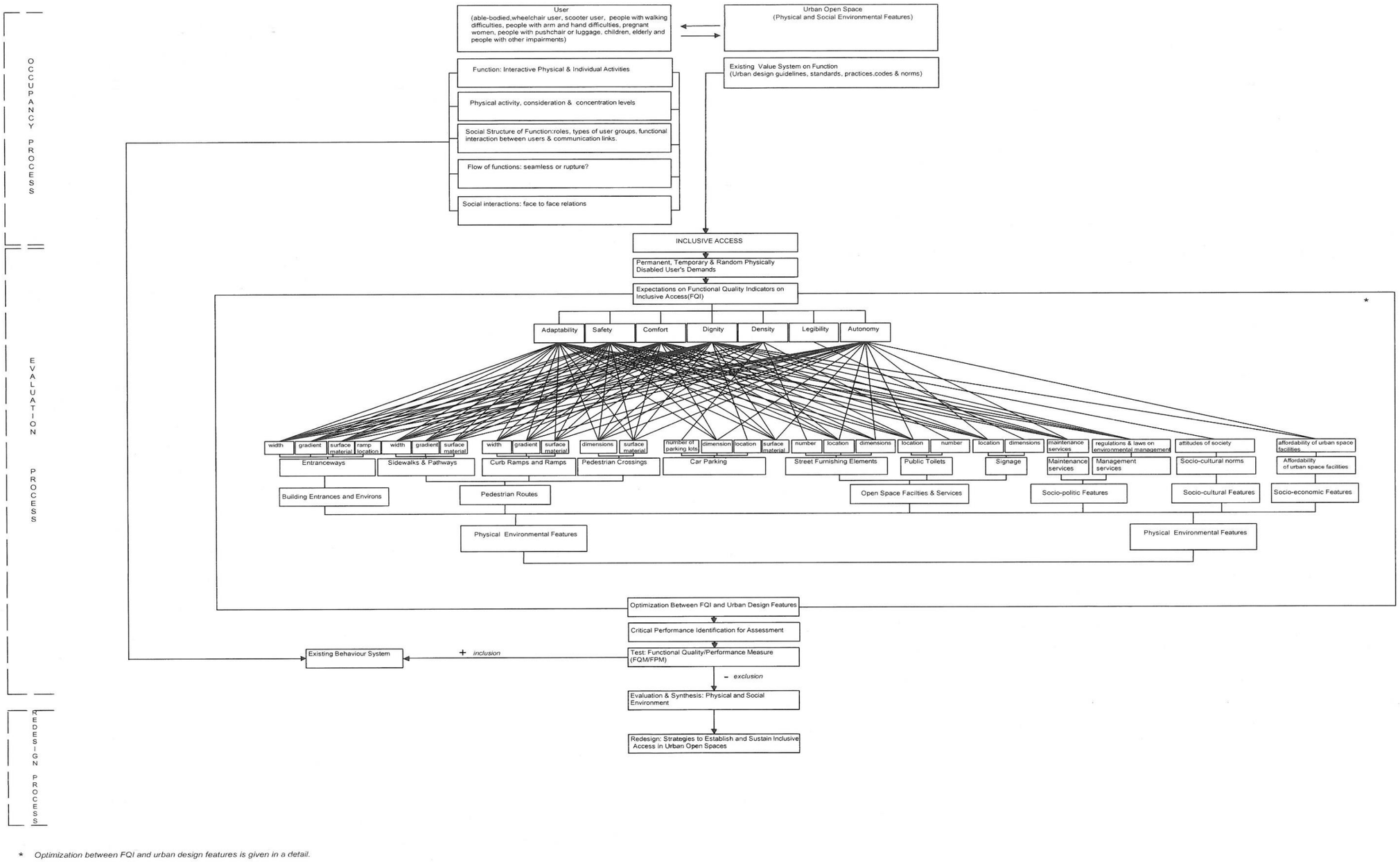
A combination of three processes gives the systematic framework for the evaluation of inclusive access in urban open spaces. A model was determined for the measurement functionality of city centre schemes (Figure 5.24).



1.UN (2004)	5.Kirschbaum et al. (2001)	9.Ferguson (1997)
2.Reyes et al. (2013)	6.Gür (1996)	10.Burton (2006)
3. Müftüoğlu. (2000)	7.Goodall (2010)	11.Goldsmith (1997)
4.UNNATI, (2005)	8.Hanson (2004)	12.Zeisel (1989;2006)

*General layout of an evaluation model is mainly adapted from the Behavioral design/ evaluation model of Moleski (1974; ed. in Gür, 1996).

Figure 5.24: A holistic structure of POE model



* *Optimization between FQI and urban design features is given in a detail.*

Figure 5.25: A holistic structure of POE model including optimization process (developed by researcher)

5.5 Summary of the Chapter

Post-occupancy evaluation contributes to clarify the real quality and performance of urban open space. It is also as a powerful tool which refers to make a diagnosis of the inputs of inclusive design guidelines and enables design experts to determine preferences and needs of users via evaluations from the users' perspective. In this chapter; a new POE model is developed for establishing and sustaining inclusive access in urban open space. During the development of the POE research model, the main emphasis has been given to mobility characterization and movement patterns in urban open space and the POE model sought to suggest POE indicators on inclusive access of people with a range of mobility capabilities in terms of health, age and income level.

POE model has been systematically explained under three main processes-occupancy, evaluation and redesign- of urban design projects. Firstly, user and urban open space interaction have been explained for the occupancy process and then, user's behaviour and existing value system of function in urban open space has been clarified. Secondly; the evaluation process has been given by explaining in a logical step; definition of expected behaviour and key performance indicators, completion of optimization between performance indicators and urban design features, critical performance identification and functional performance measure. The last stage of evaluation process has been intended for reviewing outcomes of the measurement by making a comparison between the existing behaviour system and expected performance value that provides to decide whether a redesign project is necessary which is a third process. In the following chapter, the POE model will be implemented for testing inclusive access of people with and without physical disabilities in Kyrenia Town Centre.

Chapter 6

CASE STUDY: IMPLEMENTATION OF POST-OCCUPANCY EVALUATION MODEL FOR TESTING INCLUSIVE ACCESS IN KYRENIA TOWN CENTRE, NORTH CYPRUS

This chapter explores the case study which was carried out for exploring urban open space's accessibility and usability for people with and without physical disabilities in Kyrenia Town Centre. In order to obtain the required data for user-centred approach evaluation, a main commercial strip of Kyrenia Town Centre which is extensively used by both citizens and visitors, is being selected as a case study for the research. This strip is the main pedestrian axis (route) which lies between the Baldöken Car Parking and Atatürk Square.

In this chapter, the necessary model on POE methodology is established to test preferences, needs and satisfaction levels of people with and without physical disabilities with reference to inclusive access requirements. The chapter is divided into three main sections. In the first section, the case study area is explained. In the second section, the methodology of a study is given. In the third section, the survey findings are represented.

6.1 Selection of a Case Study Area

In North Cyprus, some local authorities are interested in the production of an accessible environment for disable user groups. Kyrenia Municipality is among local authorities which are sensitive to disabled people's needs and aspirations. When the

urban core became dysfunctional and its quality deteriorated due to an accesibility problems, the Kyrenia Municipality decided to rehabilitate it by providing accessibility requirements of both able-bodied and disabled people. The upgrade scheme was introduced in 2005 as an attempt to make all Kyrenia Town Centre available for all users, especially disabled pedestrians. Since the rehabilitation project is a unique comprehensive project that meets the needs of disabled people and the project still incomplete, the Kyrenia Town Centre was selected as a case study for the research. POE will be beneficial to the project progress and it was decided to make a diagnostic evaluation which examines inclusive access in Kyrenia Town Centre. The survey results can serve as providing feedback for designing an urban centre, which is more inclusive for people with and without disabilities.

On the other hand; Kyrenia City is the tourism capital of North Cyprus and the town centre is densely used by both local people and tourists. This study could be useful for the development of the tourism sector. The provision of inclusive access will not only propose disabled-friendly urban open space, but will also increase the importance of the town centre by co-branding as a 'barrier-free tourism destination' that creates a great potential to gain a `niche market` for North Cyprus`s tourism industry. Accordingly, inclusive access allows all residents and tourist users with or without disabilities to use the same atmosphere. Beyond accessible urban tourism precints, inclusive access policies and strategies would support benefits in social engagement, health outcomes and economic welfare and also produce the sustainable well being of residents.

Based on what has been stated above; the main commercial strip of Kyrenia Town Centre that lies between the Baldöken Car Parking and Atatürk Square was chosen as a case study area. This section of town centre is a pedestrian zone almost all town centre's visitors have travel experiences using this link. Accordingly; two streets and two squares were analysed in terms of accessibility and usability of user groups. The functional quality/performance indicators were used to measure the level of inclusive access of people with and without physical disabilities who had travel experiences within sample area (Figure 6.1).

Figure 6.1: Kyrenia Town Centre (KTC)

6.2 Methodology of the Analysis

In this study, a diagnostic POE was used and both qualitative and quantitave methods were carried out for the evaluation. In order to obtain more reliable results, the diagnostic POE was organized within a systematic framework:

i. Preliminary Diagnostic Exploration
ii. Research Design
iii. Data Collection
iv. Documetation and Data Analysis
v. Evaluation of Results.

i. **Preliminary diagnostic exploration** is the process of a research that involves initial content analysis with the collection of written documents about site, off-site interviews with governmental authority and site visits for physical and social content analysis. **Written documents** or **archival records** were examined in order to identify historical background and the development process of a site. In addition to written documents, it was required to obtain more detailed data for the initial diagnostic exploration. The other qualitative research methods as **off-site (administrative) interviews** and **content analysis** through site visits were done in order to obtain data necessary on research design. The **content analysis** was conducted to understand physical and social context of the research site. The visual analysis was assist to design of required inventory forms for the research.

ii. **Research design** delivered selection of suitable data collection and analysis methods. In research design process, inventory forms were also prepared and used for **piloting the methods**.

iii. **Data Collection** includes **observations** which were performed to obtain data necessary to complete behavioural maps and a **survey** was completed for testing performance level of inclusive access.

iv. **Documentation and data analysis** was the stage that gathered data has been documented and analyzed. While, the observation results were drawn into behavioural maps and problematic environmental features were indicated on these maps, the survey results were documented by using statistical values as frequencies, arithmetic averages and standard deviations.

v. **Evaluation of results** was the process which data analysis results were evaluated and synthesized with making comparisons between the findings and expected performance value of an indicator.

6.3 Preliminary Diagnostic Exploration

Preliminary diagnostic exploration included initial content analysis through diverse literature reviews, administrative interviews and field survey using photography, Auto CAD drawn site maps. The preliminary diagnostic evaluation assisted to preparation of required research materials as observation schedules, site plans for behavioural mapping and survey forms.

6.3.1 Kyrenia (Girne) City and Kyrenia Town Centre

Kyrenia is one of the important coastal settlements of Cyprus which is the third largest island of Mediterranean after Sicily and Sardinia. The town lies at the foot of northern slopes of the Kyrenia Range that faces to Mediterranean Sea. The harbour and castle are significant elements of the city. The Medieval Castle was constructed around the small horseshoe shape of the little harbour which is situated on the Northern shore of an island. The Kyrenia has always been considered as the most attractive place of North Cyprus. Hence; the town is visited by all people who are living in a Cyprus

Island and the tourists as well. The most attractive part of a town is a Liman Arkası District which is also centre point of a city (Güvenbaş, 2008), (Figure 6.2).

Although Kyrenia City is the tourism capital of North Cyprus, education is among the other important economic locomotives of the coastal town. Based on the last census results, the de-facto (permanent) population of town is around 33,207 (State Planing Organization, 2011).

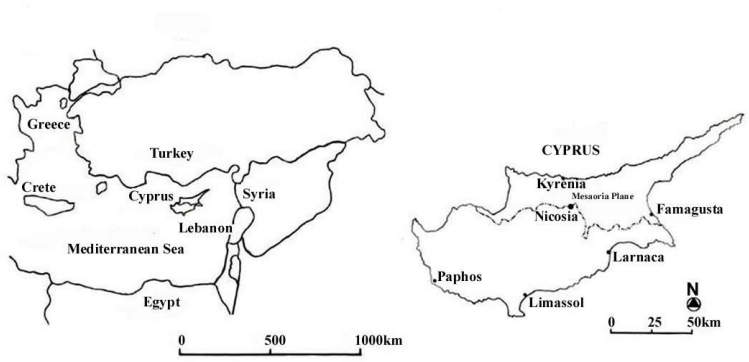


Figure 6.2: Location of Cyprus and Kyrenia City

The city has a rich historical background. Due to its strategic location, just like the island as a whole, Kyrenia has also been ruled by many nations throughout the history. Ancient times, Persians, Romans (58 BC-395 AD), Byzantines (395-1192), Lusignans (1192-1489), Venetians (1489-1571), Ottomans (1571-1878), British (1878-1960), Turks and Greeks-the period of Republic of Cyprus- (1960-1974) and after 1974 Turks were among the users of the city (Gürsoy and Smith, 2006). Today, many historical, architectural and cultural heritages remained with its 6000 year long history which influences the city's multicultural identity.

After Peace Operation in 1974, the demographic profile of the Kyrenia city has directly changed. Because, the Cyprus Island was divided into two sections. Greeks and Turks had to replace their settlements. While, Turks settled in Northern part, Greeks left from Northern part and started to live in Southern part of the island. Besides, many Turks immigrated from Turkey and they were inhabited in the empty villages which were abondened by Greeks. In 1986, approximately ten percent of 2,500 permanent British residents remained. Following 1986, Kyrenia city started to develop through tourism, trade and construction. Since 1990, tourism has been developed in the city. The Kyrenia city became to be most attractive tourist destination, because it possesses many historical buildings, long coasts and valuable natural environments and its charming scene still invites all the tourists who visit the island. In 1990's, urban growth of the city also affected by suitcase trading between Turkey and Kyrenia that caused to requirement of more accomodation places for visitors. The many hotels were opened in the city centre (Oktay, 2005).

In 15 April 1993 Old Municipality Zone was published. Untill this date, Kyrenia was expoused to uncontrolled development and urban growth. Based on the notice, traditional and historical values of the city are preserved and the urban growth began to depend on planned and designed projects (Oktay, 2005).

After 2000, new construction boom took place in the city of Kyrenia. As a result of the rapid growth of the city both physical feature and user profile of the city has changed. This transformation influenced utilisation of public open spaces in a negative way. In adition to increased tourism related activities, international universities were

established in the Kyrenia City and this has led to an expansion of the population (Güvenbaş, G., 2008).

Today, Kyrenia Town Centre is located at the back of the historic area and harbour. The town centre has a mixed-use, recreation-based urban core with various historical, architectural and cultural points of interest. Ramadan Cemil Roundabout is as the starting point of the town centre and its open to the main activity spine –Ziya Rızkı Street. Ziya Rızkı Street starts with one way traffic directing itself to west end of another roundabout and this street links to Atatürk Street which allows vehicular traffic just from its South part. The end of Atatürk Street at the North part open to Atatürk Square that is situated in Kyrenia Sea Front (Kordonboyu). Street network between the Ramadan Cemil and Atatürk Square is the main pedestrian flow, almost all visitors had travel experience by using this network.

In 2000, uncontrolled urban sprawl took place and population increased in the Kyrenia Town Centre. Generally, new buildings were designed without considering three dimensional qualities or movement through and activites in the outdoor spaces. Because of these recent developments and their negative consequence, the municipality developed a new scheme to upgrade Kyrenia Town Centre's urban space.

In 2005, the major commercial strip and urban square of Kyrenia City Centre, was designed by the Municipality. In this project, a new upgrade scheme was introduced as an attempt to make the Kyrenia Town Centre available for all users, especially pedestrians. Modifications for people with disabilities were also included in the scheme. Detailed information about the project was obtained during the off-site (administrative) interviews.

6.3.2 Off-site (Administrative) Interviews

During the off-site interviews, the municipal staff has been interviewed to get detailed information about the upgrade project of the Kyrenia Town Centre. The municipal staff was expected to explain the following issues:

- Is there a disability service in the Municipality?
- Are there legal rules and standards that cover the needs of the disabled?
- Did they include the needs of the disabled in their projects?
- What arrangements were done for the disabled in the Kyrenia Town Centre upgrade project? (Appendix C).

The municipal staff (architects and urban planners) gave detailed information about the arrangements on accessibility features and restrictive issues on the materialization of these features. It was determined that the municipal staff has knowledge on inclusive access issues and they have attempts to provide disabled-friendly urban centre.

In 2005, the Kyrenia Town Centre upgrade scheme was implemented and partially completed upgrades regarding rehabilitation of all movement areas: sidewalks, curb ramps, pedestrian crossings and car parking areas. Moreover, upgrade of urban squares by designating large areas as traffic-free pedestrian zones with additional greenery and streetscape elements has allowed more safe and comfortable usage for both disabled and non-disabled people. The completed improvements included following.

- Widening and repaving sidewalks by removing improperly placed gratings.
- Renewing a drainage system to prevent accumulation of water on sidewalks.
- Designing curb ramps at pedestrian crossings, which do not have cut-throughs.

- Changing curb ramp gradient with suitable slopes.
- Designing ramps for some level differences.
- Installation of more car parking facilities by designating or adding parking places and access aisles for disabled users.
- Extending the curb into the parking lots designated for disabled users.
- Installation of informational signage for designated parking facilities.
- Installation of warning signage to vehicle drivers for pedestrian safety.
- Placement of safety bollards to protect pedestrians from vehicle traffic.
- Organization of regular maintenance programs and increasing frequency of maintenance schedules.
- Installation of more resting elements and ATMs.
- Refurbishment of public toilets.
- Enactment of new laws related to parking control and traffic management for the safety of pedestrians.

In 2016, the project had not been completely implemented. Some proposed ideas, such as a disabled lift that would provide accessibility between the main junction and urban centre, were postponed because of budget limitations. In addition to this, when the National Council approved disability standards, the Kyrenia Municipality declared that there is compliance on provision of accessibility standards in all architectural and urban design projects. During the same year; current conditions related to mobility were reviewed and postponed improvement schemes were rearranged with addition of new proposal for a transportation master plan. In the plan, the public transportation system was reviewed by including arrangements related to mobility upgrades in all of Kyrenia Town. In this plan public transportation system was reviewed and

rehabilitated by including arrangements on junctions at 27 points, bus stations, road directions, car parking zones, sidewalks and pedestrian crossings (Appendix D).

As of 2017, the revised town centre improvement plan had not been adopted due to political and financial hurdles. The municipality is currently dealing with its development and seeks ways of putting the proposal into practice. Since, this research aims to clarify the functional quality and performance level of urban open spaces after some upgrades were completed in the Kyrenia Town Centre development project, the results are expected to be a valuable contribution to the current and future redesign plans of the municipality.

6.3.3 Preliminary Site Visits and Content Analysis

Preliminary site visits were carried out for the design of a more systematic and reliable POE research. During the preliminary site visits, the content analysis was done with written and visual documentations and the details of both physical and social content were documented for the preparation of inventory forms of a research. For the preparation of behavioral maps, the main characteristics of environmental features that affect inclusive access formation was examined and they were documented on site lay-out plans.

6.4 Research Design

The research process is related to organization of an effective data collection process that was composed from two stages:

i. Choice of research method
ii. Piloting the method.

6.4.1 Choice of Research Methods

Conceptual framework of a study assists to determine suitable research techniques which are required for the data collection. In contrast to other types of POE, like indicative and investigative POEs, the diagnostic POE was used, because it has more sophisticated measurement techniques and the collected data from representative samples was systematically analyzed. Furthermore; the research outcomes of the diagnostic POE were reviewed to diagnose or evaluate the current situation. The diagnostic POE has been required multiple sources to gather data that covering the same sets of facts or findings and it involves both qualitative and quantitative toolkits, a survey and systematic observations for behavioural mapping. In addition to the survey, observations were carried out for representative samples that allow examination of problematic qualities in a diversity of urban contexts.

Table 6.1: The methodology of a study

Methodology	Objective
Observations and Behavioural Mapping	To obtain behaviour and activities of urban space users. The method assists to categorize and compare different user group's behaviour.
Survey	To test the level of inclusive access in Kyrenia Town Centre. The method gives a quantitative value of urban open space's performances for people with and without physical disabilities.

6.4.1.1 Observations and Behavioural Mapping

Observations are contemporary data gathering methods which are generally prefered by researchers to gather required data through field research. It is aqualitative methodology that has central strategy on data collection. Behaviour mapping is a product of observation, as a tool for place analysis and design and it is also recording technique which reinforces observation for studying environmental influences on human behaviour. It was first applied in 1970 by Itelson and others (Betchel and Zeisel, 1987, 22; ed. in Hussein and Daud, 2014). As noted by Betchel et al. (1987) the main purpose of behavioural methods is provide to insight for research questions and problems. It is required to make observation with five aspects as follows: 'behaviour, environment, time, observer, and record of observation in relation to the mapping of an person's utilization in setting', (Hussein and Daud, 2014, p.102). The method is also suitable when observing people with disabilities, because it supports observing whole picture of a disabled individual's participation into his or her environment, to know about 'what behaviour occurs', and 'why its occurs and what its importance and meanning' (Lang et al.1974, Hussein and Daud, 2014, p.102).

In this POE study, observations and behaviour mapping of on-site activities were used to gain whole sense of participation in Kyrenia Town Centre facilities. The behaviour mapping data is supplementary benchmark of the study and it contributed evaluation of performance of the town centre activities by directly observing real users instead of trying to guess possible reactions in the area. The observation forms were designed to document required data during each observation sessions. It was applied to various resources for the preparation of observation forms and the development of behavioural

maps (Zeisel 1995, Gür, 1996, Whitehouse et al. 2001, Moore and Cosco, 2007, Malkoc, 2008, Hussein and Daud, 2014).

During observation sessions, the number of observed users were counted and all details of observed users were coded into observation forms which were designed in a matrix form (Appendix E). The observation forms were logically formulated with x and y coordinates. While x coordinates or rows were organized for the documentation of information on gender, nature of disability, group types and activity patterns, y coordinates or coloumns were reserved to document different users' behaviour. The following topics were examined in the observation forms:

- General Information on Observation
    i. Observation date
    ii. Observation period
    iii. Observed sub-space
    iv. Observation number
    v. General information on group types in terms of social interaction
    vi. General information on observed user behaviour
- Temporal characteristics of the site
    i. Weather condition
    ii. Air temperature
    iii. Situation in using density
    iv. Notes on other temporal events
- Users' demographic features
    i. Gender
    ii. Nature of disability

- Activitiy patterns
    i. Active engagements
    ii. Passive engagements
- Self-control of activity
    i. Activity with help
    ii. Activity without help

Table 6.2: The sub-spaces were coded with different numbers in observation forms

S1	Ramadan Cemil Square and its near vicinity
S2	East section of Ziya Rızkı Street
S3	North section of Atatürk Street
S4	Atatürk Square and its near vicinity

In total, four sub-spaces were observed. The observation form were seperately used for each sub-spaces and the sub-spaces were coded with different numbers in observation forms. Each sub-space was observed for thirthy minutes. In addition to sub-spaces, activity groups were separately coded as shown at below.

Table 6.3: The activity groups

SP	Single Person
PP	Parallel Person
TP	Two Person
SG (3-5 people)	Small Group
BG (more than 6 people)	Big Group

Type of user's behaviour were also categorized according to their social interaction.

Table 6.4: Type and categories of user behaviour

SE	Self-esteem/self-focus- a person who has not any interaction with other users
CO	Completely observer- the user who only observed environment without participating activities.
VI	Verbal Interaction- user who has interaction with other users through using verbal communication skills
AU	Active Users- the user who are functioning with activities as walking; cycling, i.e.
O	Others-who are not defined in any classifications that was given above

Behaviour mapping recorded users' movements from the time that user entered KTC untill they moved out from the place. The observed users' behaviours were systematically marked on site lay-out plans with a previously designed behavioural mapping symbols which include coding each type of users in terms of their gender, mobility capability and activity (Figure 6.3).

During the observation sessions, A3 size copy of site plans and drawing tools were carried out. Researcher tried to remain as marginal participant to prevent manipulating the results of the behavioural mapping and followed KTC users actions by giving main emphasis on the links between the inclusive access indicators and urban design features. Through observations, utilisation of entraceways, pedestrian routes, street furnishing elements and amenities were observed for the determination of the physical barriers. Maintenance and management services, societal attitudes and urban space facilities were examined in order to define existing social barriers on town centre

usage. Observed activities were quickly drawn on site plans by using symbols and further photographs were taken for detected environmental barriers that create problematic usage for the people with and without physical disabilities. After behavioural maps were collected on site plans, they were overlapped to make an overall maps. Different overall maps were drawn for each focus groups behaviour and in total forty maps were completed to analyzed and documented indicate space-wide and spontaneous use in four sub-spaces (Appendix F).

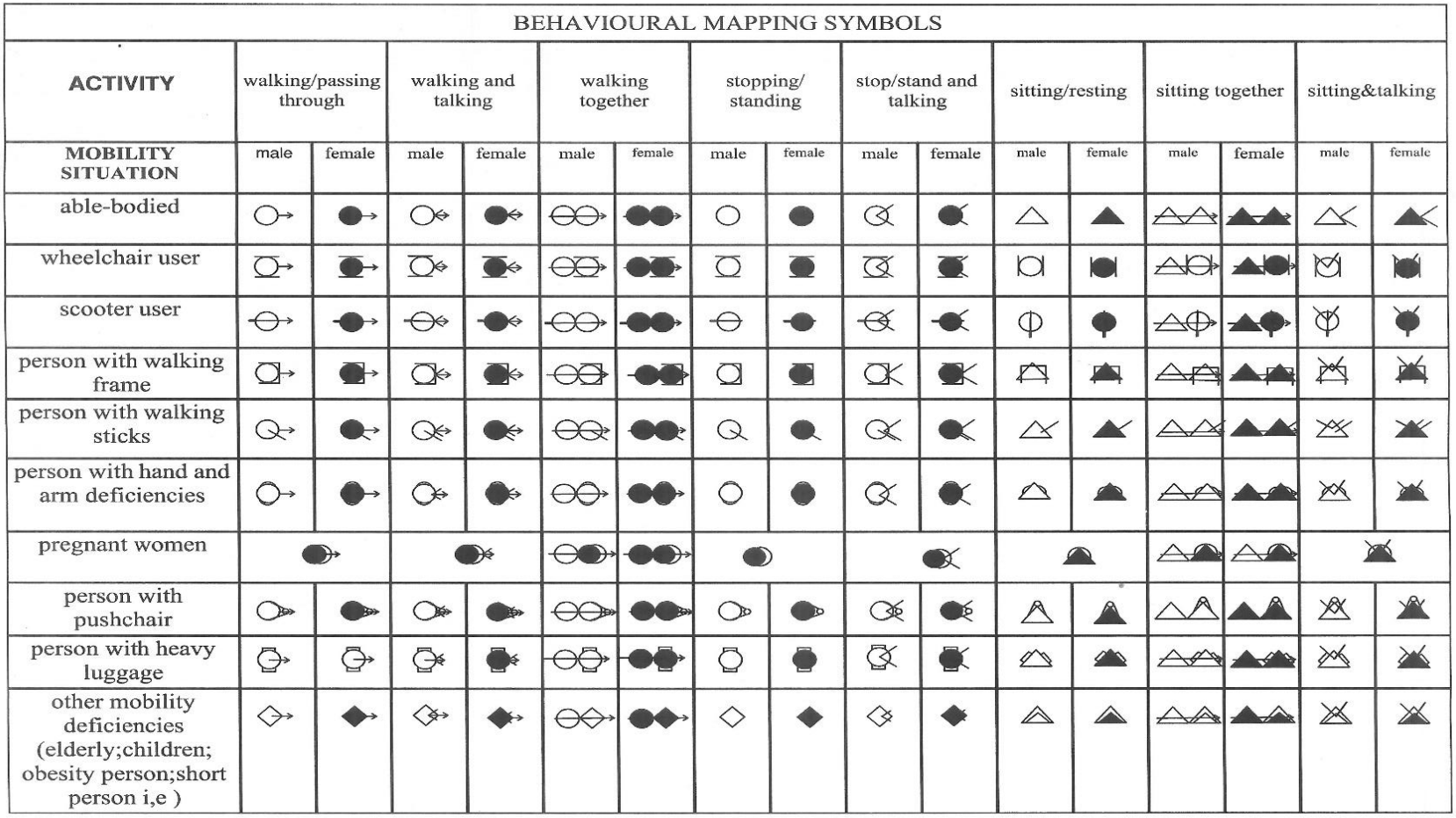


Figure 6.3: Behavioural mapping symbols

The autumn was determined as an ideal season for observation because too hot Mediterranean summers affect urban spaces' usage. Accordingly; all observations were completed between September and November 2017. The observation sessions were arranged to be conducted within 8 seperate 30-minute periods for both weekdays and weekends (Table 6.5).

Table 6.5: Observation periods

Observation Date	Observation Sequence			
13/09/2017	S1	S2	S3	S4
23/09/2017	S2	S3	S4	S1
5/10/2017	S3	S4	S1	S2
20/10/2017	S4	S1	S2	S3
29/10/2017	S1	S2	S3	S4
1/11/2017	S2	S3	S4	S1
15/11/2017	S3	S4	S1	S2
19/11/2017	S4	S1	S2	S3

A detailed sample on Observation Period was also given in the following table. Observation date and observation period for sub-spaces were presented.

Table 6.6: A detail sample of observation period

Observation Date	Observed Sub-space		Observation Period
13/09/2017	S1	Ramadan Cemil Square and environs	11.00-11.30
	S2	Ziya Rizki Street	11.30-12.00
	S3	Atatürk Street	12.00-12.30
	S4	Atatürk Square and environs	12.30-13.00

6.4.1.2 Survey

Many researchers particularly prefer to use survey method to determine existing situation of urban space with a quantitative data. Using questionnaire enables researchers to reach rapidly certain information about research topic. In this study; face-to-face interviews were conducted to randomly selected respondents who were citizens, residents of other northern and southern Cypriot cities, immigrant workers, soldiers or tourists. The focus group-disabled and non-disabled users- of a survey were chosen and represented in the simple random sampling that gives equal opportunities all being selected. Since the total population of users is unknown, the sample size was calculated according to formula for non-finite population:

n:sample size

p:sample ratio

q:sample variance that is equal to 1-p

Z:z-value

d:acceptable sampling error

$$n = \frac{z_{\alpha}^{2} p * q}{d^{2}} \qquad n = \frac{(1.96)^{2} * (0.5) * (1 - 0.5)}{(0.05)^{2}} = 384{,}16 \text{ (adjusted to 383)}$$

In equation, z-value was taken from z table and it was founded to be 1.96 for a 95% confidence level, p is the maximum variability of the population at 50% and d is the acceptable sampling error (confidence interval 0.05 = ±5), (Özdamar, 2003).

Based on this formula, the sample size was defined and 383 responses to the survey were collected. The survey form was prepared with simple and clear language and the statements were carefully selected against the possible misunderstanding. The necessary instructions was given about the estimated response time and response

method in the initial part of a form. The survey instrument was prepared in four sections: 1)demographic features, 2)frequency and purpose of town centre use, 3)accessibility and travel mode, 4)functional quality and user's satisfaction with inclusivity of access. In the first section respondents' demographic features were categorized such as gender, age, occupation, income level and any condition of disability. The second section of a survey was comprised of questions about the frequencies in use that how often, on which days, how long users stayed on average. The third section was included statements about the type of accessibility, user travel modes and public transportation's quality. The fourth section consisted of hypothetical expressions with a rating scale. In a matrix form, respondents were expected to rate the quality of physical and social environment via relationship between necessary urban design and inclusive access indicators: adaptability, safety, comfort, dignity, density, legibility and autonomy (Appendix G).

The survey forms were also coded for easier calculation and validity of the results. Hand delivery method was prefered for the survey and the survey form was prepared in two different languages-Turkish and English and it was distributed to city centre users during the weeksdays and weekends in a good wheather.

6.4.2 Piloting the Method

The pilot study was conducted to determine difficulties for the implementation of methods. The pilot study supports to construct the required changes against possible mistakes and difficulties. Therefore; the pilot study was conducted for diverse reasons:

- To search on suitability of a sample selection
- To define diversity of population
- To identify the possible number on unanswered survey forms

- To test suitability of data collection techniques for the implementation of a research
- To qualify a survey questions
- To test estimated time for the main research
- To control the efficiency of a research.

For the pilot study; observation method was tested and it was determined that some disabled groups that should be observed do not use the city centre very often, and it was decided to increase the number and period of observation sessions. The observation sessions which were thought to be 20 minutes for 4 sessions, was changed to 30 minutes 8 sessions.

The survey method was also tested and suitability of a face-to-face interview survey was proved. During the pilot study, twenty survey form was totally completed at Kyrenia Town Centre. The results of a pilot study reveal that there are some difficulties in conducting the survey. Before the pilot study, space was allocated for filling the attitude statements in the fourth part of the questionnaire. However, it was observed that organizing the questionnaire in this way could cause confusion and it was decided to show the scale numbers instead of seperating filling blanks for the statements in a questionnaire form. Organizing survey form in this way would also prevent the research from being tiring for the respondent. Another problem identified in the questionnaire form is that the judgement regarding the suitability of the bus stops was removed from the questionnaire, since there is no bus stop designed in the Kyrenia Town Centre. Based on the results of the pilot study, necessary arrangements were

made in the survey and observation forms, and then the data collection process was started.

6.5 Documentation and Data Analysis

This stage represents the data analysis results under the systematic framework. In this stage, behavioural maps are created by using observation results and statistical analysis of user surveys are made. The results of behavioural maps and surveys are given under separate headings in this section.

6.5.1 Observations and Behavioural Mapping Findings

In this POE, a systematic observations were performed to obtain data necessary to complete behavioural maps. During the observations, 1620 users' behaviours were recorded to observation forms and site lay-out plans. The analysis of observation results were determined that different people are using the Kyrenia Town Centre.

Table 6.7: General profile of observed users in terms of gender and mobility

GENDER	Male	934
	Female	686
MOBILITY SITUATION	Able-bodied person	978
	Wheelchair/scooter user	5
	People with walking deficiency	12
	People with hand and arm deficiency	6
	Pregnant women	10
	Parents with a pushchair	73
	People with heavy luggage	49
	Elderly people	385
	Children	90
	Other mobility deficiencies	12

In observations; male and female users' behaviour were seperately recorded and a total 678 female and 942 male users' behaviour were observed in KTC. The number of male users are more than female users, because KTC is frequently visited by the male soldier and immigrant worker groups.

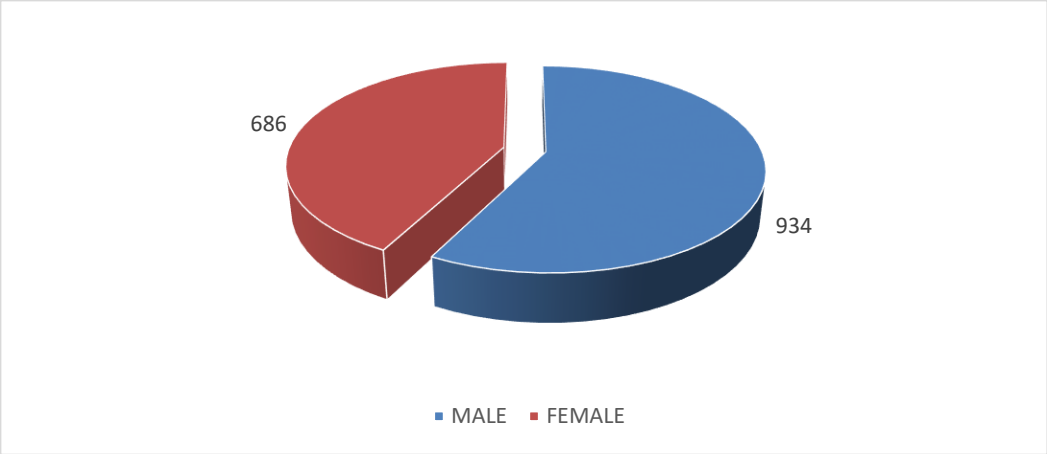


Figure 6.4: Gender distributions of observed users in KTC

Based on the figures of observation results, it can be stated that KTC is occupied by different population segment. While, 978 people were able-bodied users, 641 people had any kind of physical impairment. Elderly users were also intensively observed in different urban spaces of KTC. Therefore; the observation results remarked on the necessity of inclusive access provision and functional performance measure in KTC.

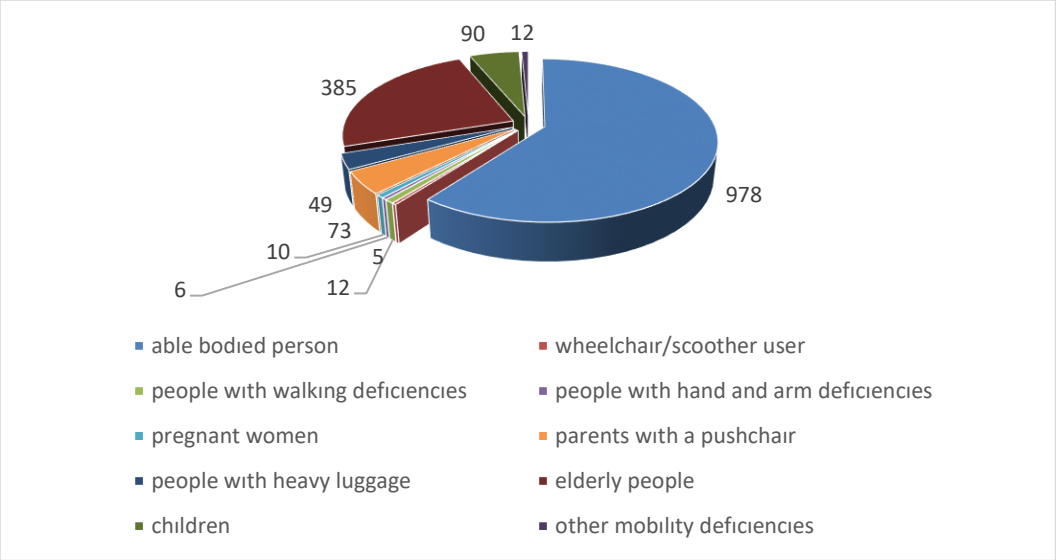


Figure 6.5: Distribution of observed users in terms of mobility condition

As is previously defined, in order to employ observations, a sample area was chosen from the most preferable movement option that is used as a main pedestrian link between the two significant squares. Almost all users of KTC have experience using that link at once. This sample area was divided into four different sub-districts. The sub-districts selected for observation included two squares-Ramadan Cemil and Atatürk Squares- and two streets- Ziya Rızkı and Atatürk Streets- which are different in character (Figure 6.6).

Figure 6.6: Four different sub-districts in KTC

The distribution of observed users in different sub-districts have been given in the following table. According to results of observations, it was determined that urban squares-SD1 and SD4 are mostly used than streets- SD2 and SD3. While, big elderly tourist groups were mainly recorded in SD1 (Ramadan Cemil Square), big soldier groups were observed in SD4 (Atatürk Square). SD2 and SD3 were generally used by two person (TP) or small groups (SG).

Table 6.8: Distribution of observed users in term of different sub-districts

SD1	SD2	SD3	SD4
509	367	326	418

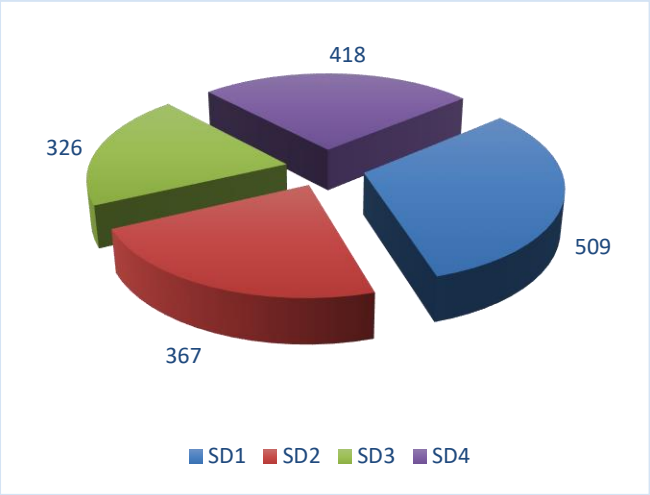


Figure 6.7: Distribution of sub-districts' users in general

The analysis of observation results shows that different people use the KTC for diverse activities. Numerous active and passive engagements were documented as follows: walking, taking photo, eating or drinking something, sitting, talking with someone, reading book/magazine, talking on a mobile phone, or looking around.

Table 6.9: Observed activities in KTC

Active Engagements	Passive Engagements
walking	Sitting
taking photo	talking/chating
eating someting	reading book/magazine
drinking someting	talking at mobile

In order to determine general characteristics and frequency of activities by different user profile, the general posture of those activities have been recorded to observation maps with behavioural mapping symbols. The observations focused on inclusive access features and behaviour of both disabled and non-disabled people were recorded in a detail. In the following lines of the thesis, observation results of sub-districts will be given.

SD1-Ramadan Cemil Square and Its Near Vicinity

Ramadan Cemil Square was observed for this study. The Ramadan Cemil Square is a commercial public square which is intensively used by passerbyes, since its linked to the biggest car parking area of town centre that named as a Baldöken Car Parking. Almost all local people and tourists were started to their pedestrian journey from the car parking for visiting Kyrenia Town Centre.

Figure 6.8: Ramadan Cemil square and its near vicinity

In the SD1 (Ramadan Cemil Square and its near vicinity), a total 509 people were observed. 294 male and 215 female users' behaviour was systematically recorded to observation schedules.

Table 6.10: Observed user profile in the SD1.

GENDER	Male	294
	Female	215
MOBILITY SITUATION	Able bodied person	238
	Wheelchair/Scooter user	2
	People with walking deficiency	4
	People with hand and arm deficiency	1
	Pregnant women	3
	Parents with a pushchair	17
	People with heavy luggage	11
	Elderly people	215
	Children	16
	Other mobility deficiencies	2

A vast majority of users in the SD1, were elderly people and they mainly prefered to use Ramadan Cemil Square for diverse purposes such as; passing through from the Baldöken Car Parking to old harbour, eating/drinking somethings, sitting on a bench and taking photo. It was also founded that the younger adults were among the other significant user groups of the SD1. The younger adults occupied in the SD1 for working, resting and using public services as transportation and ATMs. Although families including different generation were often seen, the SD1 was rarely visited by children user groups alone.

In addition to this; there are differences between the behaviour of elderly and children. While observation revealed that older people use SD1 at different times, families with children are tend to use urban square in the afternoon and usage density is become to be increase after the midday. The observation results showed that elderly people are not avoided from the use of crowded urban space, because they prefered to use different spots in urban square.

Observed users were categorized in terms of their physical mobility. With regards to nature of disability situation; 298 users were able-bodied people, 2 users were wheelchair/scooter user, 4 have walking deficiencies, 1 was person with hand and arm deficiency, 3 were pregnant women; 17 were parents with pushchairs, 11 were people with heavy luggage, 215 were elderly users, 16 were children, and 2 had other mobility deficiencies.

Diverse activities were performed in SD1. During the observations, user were recorded with different activities such as: 238 users by walking or passing through; 87 users crossing the street, 11 users using car parking place, 16 user getting on/off taxi/bus, 29 users were entering retails, 73 people were siting, 12 users with other activities as working, buying or selling something, etc.

In order to determine the quality of footways leading to the main entrances, 73 people behaviour including disabled and able-bodied people, were observed while they were using entrance way. It was noticed that almost all buildings' entrances have level differences, especially significant public buildings' entrances have stairs without ramps. Entrance ways were mostly unsuitable and unaccessible, especially for people with disabilities. Level differences without ramps and inadequate widths of entrance ways prevented wheelchair and pushchair users from entering the buildings. It was also clarified that the stepped entrance routes without handrails impeded ambulatory, elderly, pregnant and people having other mobility deficiencies. Main ways to the building entrances have slippery surfaces, hence they causeo safety problems and uncomfortable uses.

In the SD1, only Municipality building has ramp with handrail, but it refers uncomfortable use to wheelchair and pushchair users, further inaccessible for the some forms of double pushchairs. Besides, gripping surfaces of handrails are not mounted and unsuit to uses of people with disabilities (Figure 6.9).

Figure 6.9: Entrance way of the Kyrenia Municipality building

Figure 6.10: Entrance way to the services as toilets, pharmacy is inaccessible to people with physical disabilities

The main entrances of commercial and retail buildings were mostly paved with granite and marble materials which have slippery surfaces. In this sense, building entrances are dangerous for society at large. In order to provide safety, surfaces of building entrance ways should be covered with non-slippery hard material and it should be well lit.

Figure 6.11: Views from the inaccessible entrance way which has level differences without ramps

Figure 6.12: Stairs without ramps and appropriate materials are not provided safe and comfortable use

Considering observation results, it can be stated that building entrances are not suitable for all users. Especially disabled people obstacles by entrance ways which have not ramps, handrails and non-slippery surfaces. This means that building entrances do not offer adaptability, comfort, safety, dignity and autonomy in function. All these qualities are still desirable.

In the SD1 pedestrian routes are most problematic for people with mobility difficulties and a series of problems related to pedestrian routes-sidewalks, curb ramps, pedestrian crossings'-design were documented during the observations.

If the level differences are inevitable in urban space, the ramp arrangement is essential to provide inclusive access to activity areas without difficulty. However; the observation results revealed that wheelchair and pushchair users were not able to move around the Ramadan Cemil Square freely and easily. The lack of suitable ramp arrangement creates serious problems for people with disabilities. Besides, pregnant women, children and elderly people face problems with safety, comfort and self-control while using SD1, because of the stairs without ramps (Figure 6.13). Landscaping elements as trees placed on the pedestrian routes make the width of the

pathways insufficient for wheelchair users and parents with pushchairs. This situation hampers other users as well and it causes unsafe and uncomfortable use.

Figure 6.13: Stairs without ramps cause problems on safety, comfort and self-control for pregnant women, children and elderly people

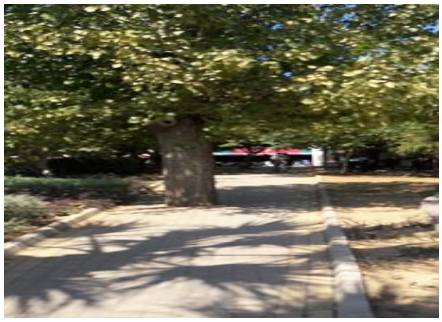


Figure 6.14: The location of the pathway is not available for wheelchair and pushchair users

The undulated texture of pathways is troublesome for both able-bodied and disabled people. Abnormal paving differences and random rises on the road can pose great danger. People with wheeled devices are not able to access freely and they mostly require to be assisted.

Figure 6.15: The undulated texture of pathway is troublesome for both able-bodied and disabled users

The primary distributors of a square with two-way traffic are not safe, because dimensions of pedestrian crossings with refuge are not adequate for wheelchair users

and a sufficient space is not provided to maneuver wheelchair. Meanwhile, wheelchair and pushchair user's movements often require more space that permits a change of direction, but in the field survey, it was determined that wheelchair user requires more effort and time at the pedestrian crossing. Besides, there are traffic safety bollards placed in the middle of the pedestrian crossing restricting movement and orientation of wheelchair and pushchair users in urban open space.

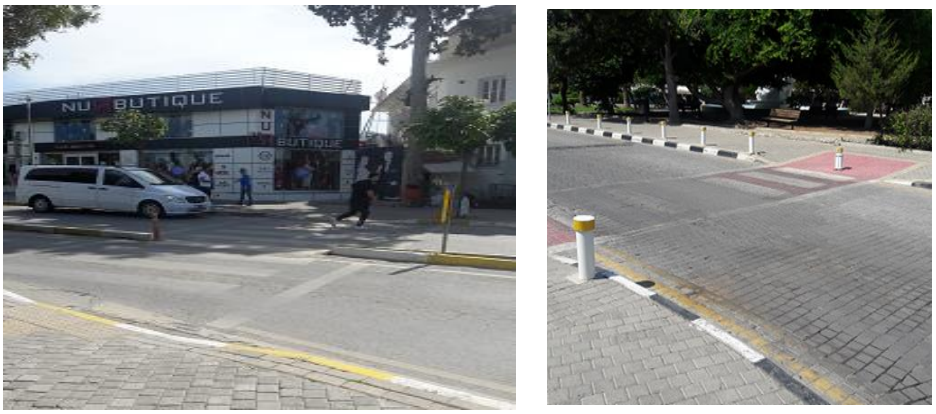


Figure 6.16: Pedestrian crossings are not properly dimensioned for the uses of society at large

Some pedestrian crossings have not to curb ramps or do not conform to inclusive access features. The absence of curb ramps makes the area inaccessible for people with wheeled devices, bicycles and scooters.

Figure 6.17: Pedestrian crossings without ramp arrangements obstacles people with disabilities

Figure 6.18: Small children often ride their bikes or push scooters on sidewalks, lack of curb ramp failed their activities in urban open space

The patterns of barriers have also been experienced in SD1 due to improperly designed open space facilities and services. As it is determined through behavioural observations, car parking, street furnishing elements, public toilets and signages are not suitable for the use of able-bodied and disabled people.

The most significant car parking area which is Baldöken Car Parking, is located in the Ramadan Cemil Square. This parking place allows 337 cars and 4 of these parking lots were designated for disabled users. Observation results revealed that the location of parking facility is tiresome for its users. If people prefer to use this car parking area, they have to walk minimum of 5 minutes to reach urban space facilities in the SD1. In addition to this, pedestrian routes that link the car parking area with building entrance ways, do not offer free, continuous and unobstructed mobility to people with disabilities, further that they can be dangerous for people with and without disabilities. Because, rough paving constitute a problem for car parking users.

Additionally; the designated main pedestrian path in the parking area is not available to the uses of pushchair users due to the bollards which were placed against the disrespectful drivers.

Figure 6.19: The surface texture of paving material is not suitable for all users

Figure 6.20: Bollards obstacle continuity in a pedestrian access

Since the number of parking facilities is not enough in terms of the overall capacity of the area, it is possible to see some vehicles blocked the sidewalks and pathways in the SD1. Besides, surfaces of designated parking spaces is suitable with its smooth and stable covering material, provides safety for users.

Figure 6.21: Disabled designated parking lots in Baldöken Car Parking

The ticket stand is not accessible to every people, wheelchair user and a very short person can not reach stand for paying, its steeped footway is not adaptable to the use of elderly people, people with walking deficiencies and wheelchair or scooter users.

Figure 6.22: Inaccessible ticket station for the disabled person

In technical terms, the use of public transportation is not easy, because of the unsuitable design of both bus stop and vehicle. Kyrenia Town Centre has not a sufficient number of bus stops and a bus stop that is far from the desired activities, is located behind the SD1. This bus stop is not graspable and visible from long distances and so bus drivers prefer to stop at the unofficial transit point. This illegal transit point has not any special bus stop and curb ramp arrangement for drop-off/pick up services. Therefore, public transportation facilities are not available for almost all users. The long distance from the unique bus stop does not offer adaptable and comfortable use, especially older adults and people with walking impairments may need much effort to access public transportation services.

Figure 6.23: Elderly man was walking to the town centre from the bus stop, but he was seen as so tired

As it can be seen from the observation results, there is no accessible public transportation system in the SD1 that negatively influences dimensions of inclusive access and social cohesion in Kyrenia Town Centre. Accordingly, great attention should be paid to focus on seamless travel and missing links have to be provisioned in terms of the transport chain.

The absence of barrier-free toilet facilities represents a challenge for town centre users in the SD1. Since they were frequently located in the basement, they limit their functionality for those reliant on mobility devices. Such a situation is much more difficult for wheelchair users. Observation results were determined that there are two public toilets in the SD1. The one is located opposite of the Ramadan Cemil roundabout and it has stepped entrance way without ramps and handrails that causes accessibility problems for people with mobility difficulties. Another public toilet is located at the basement with numerous slippery surfaced steps that are not functional for society at large.

During the overall observations, it was not seen any wheelchair or scooter confined person who uses those toilets, while able-bodied people, pregnant women, children are observed as the main users. Sanitary facilities are not properly designed for the use of people with mobility aids or devices as well as pushchair users who were not able to get a pushchair through a lobby leading to the WC compartments.

Figure 6.24: Public toilets were located in the basement which is inaccessible for disabled users

Resting equipments were arranged in two different forms in the SD1; benches with back rests and benches without backrest. People with disabilities especially elderly users were generally recorded while using benches with back rests. Benches without backrests provide inconvenient uses to the older person owing to their lower seat height from the ground to facilitate seating. Benches without backrest are uncomfortable and unsafe for people with mobility difficulties, such as elderly people, pregnant women and people with mobility aids.

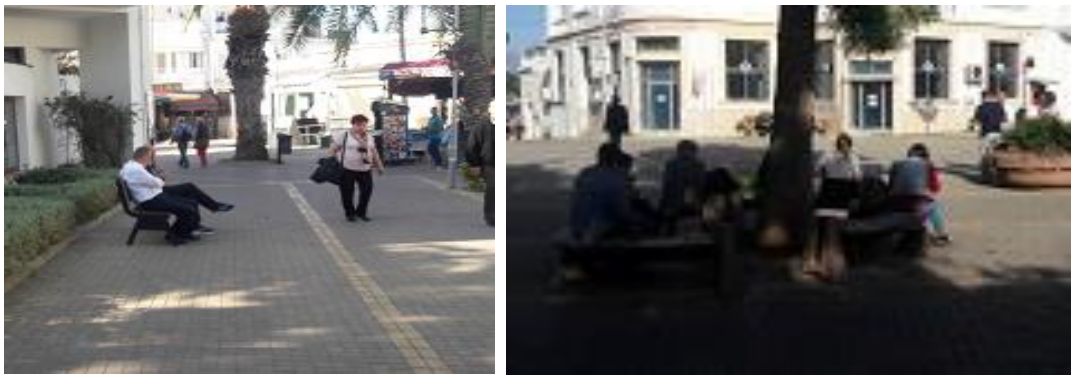


Figure 6.25: Examples of different form of benches in the SD1

The number of resting facilities are not enough in terms of the user density, therefore people sometimes prefer to sit and rest on the stairs of the closed shop's entrances.

Figure 6.26: Stairs are used as sitting elements the able-bodied people

Specific measurements in public spaces have to create freedom from barriers for larger groups of the population. Disabled people must be able to move around public space and reach facilities without someone's help. Although the resting facilities around the water element were properly designed and possess suitable anthropometric measurements, the leading footway to such area is not suitably arranged for the access of individuals. Because, there are level differences without any ramp arrangement.

Figure 6.27: Disabled people are not able to reach resting facilities independently, they may need someone's help, because of the level differences

ATMs are not designed suitable to standards, because the slot of mailbox was not appropriately placed and the floor surface was covered with slippery material. The field surveys revealed that ATMs were mostly used by able-bodied person (Figure 6.28).

Figure 6.28: ATMs do not provide dignity, comfort and autonomy in use

In SD1, it is generally observed that poor signage restricts users and causes orientation problems for KTC users, especially for elderly tourists. Information panels were not placed at the right position and form, wheelchair users can not use signages, because the height of panels is exceed the eye level of those users. Besides, other users have also difficulties while using signages, due to panels with unclear surfaces. Signages are not illuminated hence they are not appropriate for night use.

Figure 6.29: Information maps in the SD1

Poor signage possesses legibility problems in the SD1. The absence of warning signs is dangerous for the people. This situation prevents users with mobility difficulties and they are unable to benefit from the facilities in the SD1.

The observation results ascertain the weak situation of physical environmental quality that does not conform to dimensions of inclusive access. The functional quality of Ramadan Cemil Square and its near vicinity was not only examined in terms of physical environmental quality. Social environmental features-socio-politic, socio-cultural and socio-economic issues- were also assessed through systematic observations.

When the level of maintenance was evaluated, it is seen that the weak maintenance decreases the functionality of urban square. The mobility of disabled and able-bodied users was hindered by the reason of insufficient level of maintenance in the SD1. Overgrowth vegetation, uplifted broken slabs by tree roots, cracked concrete slabs of pedestrian crossings, sidewalks with undulated texture and spalled pedestrian crossing surfaces were among the main problems concerning weak maintenance attempts and they were determined as the significant barriers that limit people to reach the urban square. In general, users of SD1 avoid walking around these zones.

Figure 6.30: Overgrowth vegetation inhibits pedestrian access in the SD1

Figure 6.31: Deformation on pedestrian crossing's slab causes safety problems

Figure 6.32: Spilled surfaces of pedestrian crossings due to traffic load and weather conditions

Figure 6.33: The undulate texture of sidewalks

In addition to maintenance problems, it was obtained that the existence of weak and non statutory laws which were determined by local authority, brought negative impacts on users behaviours. Insufficient public transportation management and planning attempts, weak parking control and inadequate efforts to private sector control negatively impacts user's function in SD1.

The public transportation vehicles are not appropriate to use of pedestrian riders as wheelchair confined people, parents with pushchairs, elderly people, children, pregnant women, people with walking and arm deficiencies and even they provide uncomfortable use to able-bodied people.

Figure 6.34: Public transportation facilities in the SD1 and Kyrenia Town Centre (KTC)

There is a legal bus stop which was located far from desired activities and accessible design features, so other unofficial and inacessible bus stop is used as a main transit point of the town centre. The public transportation services go through illegal bus stop. Lack of bus stop, sometimes, steers people towards resting on the steps of entrance ways.

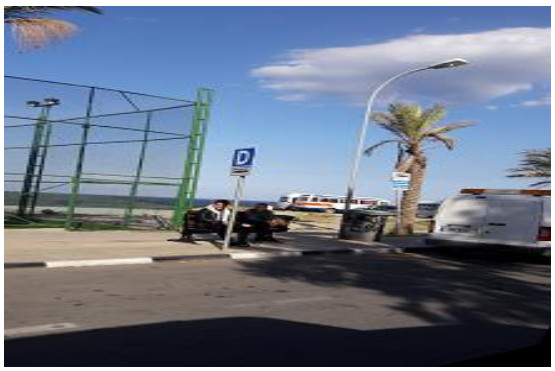


Figure 6.35: A legal bus stop is located in the SD1

Figure 6.36: Public transportation services go through illegal bus stop

In the SD1, socio-politic values and socio-cultural behaviours were paved the way for the situation that the weak controlling process was combined with the incoherent reactions of an able-bodied society. In this sense, observation results related to socio-politic values and socio-cultural norms could be given together.

The findings from observations and behavioural mapping were clarified that weak management attempts and disrespectful behaviour of vehicle drivers create environmental pressure for pedestrians. Deficient parking control results that drivers parked their vehicles in pedestrian lane even there was warning signage on the prohibition of parking or the sidewalks. Since pedestrian routes occupied by parked vehicles, pedestrians have to change their orientation and they needed to walk in the vehicle lane.

Figure 6.37: Views from different observation dates that indicate the same pedestrian route was occupied by parked vehicles

Other behavioural traces on socio-cultural norms were perceived while pedestrians were using pedestrian crossings in the SD1. The pedestrians, particularly senior tourists were blocked by drivers who do not stop at the marked pedestrian crossings.

Figure 6.38: Obstacles arising from the attitude of able-bodied vehicle users

Private businesses were not routinely controlled and there was not any effective law against the undesired actions of business owners. Therefore, the business owners were placed their furniture and stalls on the sidewalks, which impeded the accessibility of all pedestrians in the SD1.

Figure 6.39: Private sector were not routinely and effectively controlled in the SD1

Poor maintenance, weak controlling process and negative attitudes of drivers decrease the level of inclusive access and functionality in the SD1. Besides disabled, able-bodied people also feel excluded in urban space, by the reason of unavailable circumstances of socio-politic and socio-cultural environmental features.

The affordability of existing activities was also evaluated in terms of user's choices. The obtained data clarified that most of the elderly tourists prefered to sit at cafes or restaurants, other users as local people, students and immigrant workers have just use urban square for passing through, resting on a bench, using other public services (ATMs, public toilets). Because the menu prices were expensive for the people who are living in North Cyprus, especially for unemployed disabled individuals. The prices are tourist-oriented. In addition to this, some money has to be paid for public services as toilets and parking facilities. If disabled users carried special identity card or health board report they would not pay for the parking facilities.

Figure 6.40: Unaffordable eating prices for local people including both disabled and able-bodied users who have low-income

Figure 6.41: Users have to pay 50 cents for public toilet facilities

The Ramadan Cemil Square and its near vicinity have been redesigned to make it suitable for all pedestrians, including disabled people. The observation outcomes showed that the square is still inaccessible to people with and without disabilities. Both physical and social environmental features are far from the seven key indicators-adaptability, safety, comfort, dignity, density, legibility, autonomy.

SD2-Eastern Section of Ziya Rızkı Street

The Eastern part of Ziya Rızkı Street as stated in this study refers the turning point of Ramadan Cemil Roundabout up to the intersection of Atatürk street. The street is a commercial, mix-use urban corridor which includes many cafes, shops, banks, different retail services and agencies. There is one-way traffic along the street that is limited in a slow-line with three meters width which makes the street more convenient for pedestrian uses.

Figure 6.42: The location of eastern section of Ziya Rızkı Street

In the SD2, a total of 367 people's behaviour was documented on the observation forms and behavioural mapping. Table 6.11 summarises the demographic characteristics and disability situation of those people: able-bodied users (226), elderly people (64); parents with pushchairs/prams (22); people with heavy luggage (19) and children (25). The minority users involved wheelchair user (1), people with assistive devices (3);people with hand or arm deficiencies (1); pregnant women (3) and people with other deficiencies as obesity, very short person (3).

In addition to these; street activities regarding inclusive access features were observed and documented such as; walking on the sidewalks (236 people), crossing the street (50 people), getting on taxi (1 person); entering the shops (41 people); using ATMs (3 people); sitting/resting (6 people); standing and talking (8 people); eating/drinking something (3 people) and others (begging; selling/buying something),(18 people).

Table 6.11: Observed user profile in SD2

GENDER	Male	202
	Female	165
MOBILITY SITUATION	Able bodied person	226
	Wheelchair/Scooter user	1
	People with walking deficiency	3
	People with hand and arm deficiency	1
	Pregnant women	3
	Parents with a pushchair	22
	People with heavy luggage	19
	Elderly people	64
	Children	25
	Other mobility deficiency	3

In the SD2, 41 people were seen while using entrances and it was determined that pedestrian routes to the main entrances have generally stairs instead of ramps and so outdoor footways leading to the main entrances are not suitable for wheelchair users or people with mobility aids. When the level of adjacent pavement with a single step to each shop and the entrance door set at the face of the step, disabled person could not easily negotiate a single high step and ambulant disabled person may need to be assisted.

Entranceways were not provided easy and safe use for wheelchair user, older adults and people with mobility aids, due to lack of suitable surface material. Carpets were placed to some entrance ways for the aesthetical purposes, however they represent problems that wheelchair users can not to negotiate on entrance way. The surface is too hard for the wheels of the chair and undulating surfaces are less suitable and unsafe to older people and those reliant on mobilty aids, if the carpet joints are not fixed with the surface level. The disabled person should be aware that they may trip or fail while using such floor surfaces.

In addition to these, some building entrances were arranged at the street corners without considering sufficient manoeuvring space and that situation limited circulation of wheelchair confined and pushchair users.

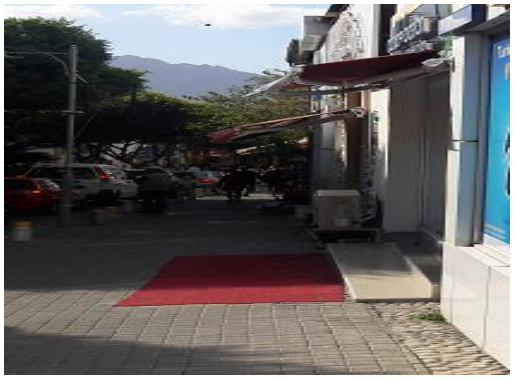


Figure 6.43: Carpeting floor surfaces can be tiresome and hazardous for both disabled and able-bodied users

Figure 6.44: Stairs at entrance footway without any ramp design is inaccessible for wheelchair/scooter users

Figure 6.45: Level differences with slippery surface material restrict access of mobility disadvantaged users

Figure 6.46: The building entrance way had not enough manouevring space for the users with wheeled devices

Pedestrians with mobility difficulties and elderly people prefer walking at the right side of the street. Because it was noticed that sidewalk slope at the left side is often difficult and decrease pedestrians self-control. Disabled people are troubled with longitudinal grade and they required to waste more energy, like a wheelchair user is riding on a sidewalk with longitudional slope and he has to use more energy to travel in a straight line to offset the force of gravity.

Figure 6.47: Sidewalks with longitudinal grade is hazardous for wheelchair confined person

Along the Ziya Rızkı Street, numerous obstacles as shop stalls, parked cycles and other equipment on the sidewalks which were detected, decreased the sidewalk width and impede disabled people's access. The obstacles on sidewalks are also dangerous for able-bodied pedestrians. Due to narrow sidewalk width, pedestrians sometimes crash with each other.

Figure 6.48: Congested pavements were limited both disabled and able-bodied people access

The street sidewalks were covered with concrete tiles, but joints between the infrastructural elements and tiles on the sidewalks cause safety problems. As it was seen through observations, a disabled girl stumbled while walking on the sidewalk.

Figure 6.49: Joints between the infrastructural elements and concrete tiles are hazardous for all pedestrians, especially for those reliant on mobility aids or who experiences mobility difficulties

Pedestrian routes which link between the building interfaces were covered with carpet and they were dangerous. It has been observed that users with and without disabilities avoid walking on this carpet.

Figure 6.50: The pathway covered with carpet is dangerous for all pedestrians

Furthermore, some parts of the sidewalk is too narrow and unsuitable to pedestrian density. The width of sidewalks is not enough for two crossing able-bodied people and so they obliged all pedestrian to use the vehicle route. That situation causes safety problems particularly for the disabled, elderly and children.

Figure 6.51: Overcrowded narrow sidewalks restrict both able-bodied and disabled people's access

Like SD1, the irregular maintenance also hindered pedestrian circulation in the SD2, and it did not ensure safety and comfort for the users, yielding pedestrians to jaywalk.

Figure 6.52: Weak maintenance of pedestrian crossings was yielding pedestrians to jaywalk

The fallen tree leaves were evidence of poor seasonal maintenance services and people with mobility aids, elderly people, pregnant women and also other users may experience any accident on the sidewalk. Hence, leaves have to be removed from the street on regular basis during the autumn. The frequent cleaning and maintenance schedules have to be developed by the local government.

Figure 6.53: Fallen tree leaves cause safety problems for all users

In particular, social interactions took place during the overcrowding periods of the town centre. People with and without disabilities suffered from mobility difficulties, due to reason of people density that combined with congested pavements. As the pedestrian conflict was seen that pedestrians crashed each of them while they were walking.

Figure 6.54: Both disabled and able-bodied people has negatively influenced by the congested pavements

In addition to these; Some menü prices in SD2 were found to be cheaper than those on SD1.

Figure 6.55: Eating prices may be affordable for people with a middle income level

SD3-Northern Section of Atatürk Street

The Northern Section of Atatürk street (SD3) lies between the junction points of Ziya Rizkı and Kordonboyu Streets. It is the secondary one-way distributor for vehicles that serves a various function as leisures, retails, commercials, residential and offices. Therefore, the street gives diverse opportunities to its users rather than using it just passing through Kyrenia Sea Front (Kordonboyu).

Figure 6.56: The location of northern section of Atatürk Street (SD3)

As it is shown in the table below, a total 326 users' behaviour were observed in the SD3. The table is sum up number of observed users in terms of their gender and disability situation.

Table 6.12: Observed user profile in SD3.

Gender	Male	185
	Female	141
Mobility Situation	Able bodied person	241
	Wheelchair/Scooter user	1
	People with walking deficiency	3
	People with hand and arm deficiencies	2
	Pregnant women	3
	Parents with a pushchair	14
	People with heavy luggage	6
	Elderly people	29
	Children	22
	Other mobility deficiency	5

Based on the gender distribution, there was a slight difference between the number of observed female and male users, because the existence of male soldier groups influenced this situation.

Although people with varied mobility were defined in the SD3, a large proportion of users involve able-bodied people (241). For the disabled user groups; 1 scooter user, 3 people with walking deficiencies, 2 people with hand and arm deficiencies, 3 pregnant women, 14 parents with pushchairs, 6 people with heavy luggage, 29 elderly people, 22 children and 5 people with other impairments were perceived. There was a considerable amount of proportion between the able-bodied and disabled user groups. It can be stated that SD3 was not an attractive place for disabled users. Its quality have to be discussed.

Concerning field survey results, it was determined that almost all building entrances are not accessible to disabled people, because the stairs and narrow thresholds in the

building entrances pose an obstruction. It has been observed that a scooter user man can not use the building entrances with single high steps. Hence he obliged to stay outside while his family members were shopping. During the overall 30 minutes observation, women family members visited several shops when men family members were accompanied to scooter user man waiting for women in front of the shop's entrances.

Figure 6.57: Most of the building entrances have single steeps that are not available for wheelchair or scooter users

Figure 6.58: A scooter user man could not enter shops while his family making shopping

Some building entrances are set back from the street frontage and those possess a ramp at their entranceways. However; the direction of ramps does not provide dignity to disabled users, because there is a problematic ramp design that has an unsuitable end with the stairs, even though it starts with a usable gradient. Ramps are not supported with handrails, so ambulant disabled person or elderly users can not able to maintain their balance, it was difficult or impossible to retain in balance, therefore a probable accidents are inevitable.

In addition to these; some building entrances with stairs that are not gently graded or situated with a ramp were so tiresome for people with mobility impairments, elderly individuals and pushchair user parents. The lack of a convenient handrail on those stairs and ramp means that building entrances are not functional for disabled users.

Figure 6.59: The ramp at the entranceway was not properly designed

Figure 6.60: Samples of inaccessible building entrance ways

Pedestrian routes in the SD3 are not available to the use of society at large. Design of sidewalks, curb-ramps and pedestrian crossings are not properly designed for the use of people with physical disabilities. Sidewalks were partially accessible for the users of SD3. The inappropriate width of sidewalks restricts all users during the crowding periods. Wheelchair users and people with pushchairs can not easily access urban space facilities, due to people density on sidewalks.

Figure 6.61: The width of sidewalks are not appropriate to usage density in the SD3

The curb-ramp arrangements on the sidewalks are inadequate and they do not meet the standards. The dimensions and surface texture of curb ramps are not suitable for use and they can not satisfy the needs of physically disabled people. Unavailable curb-ramps create transition difficulties for people with disabilities.

Non-existence of suitable curb ramp arrangements on drop-off/pick-up parking zones makes buildings inaccessible. Especially, wheelchair users are not able to leave or enter the vehicle directly in front of the entrance.

Figure 6.62: Curb-side parking facilities are not usable because of the absence of accessible curbs

The curb ramps were constructed along the street. Since the street furnishing elements as garbage bins and traffic bollards were installed over these curb ramps, the curb ramps are not entirely suitable and safe for all users. Improper location of street furnishing elements limits inclusive access.

Figure 6.63:Garbage bin was placed in the middle of a curb ramp


Figure 6.64: Safety bollards obstacled pedestrians' accessibility

Pedestrian crossings are not arranged according to standards and surface texture is not appropriate for pedestrian usage. Inappropriate location of the gratings on the crosswalks create danger for both pushchair user parents and women with high-heel shoes.

In the SD3, on-street toilet facilities are not all-inclusive, existing toilet facilities represent a challenge for any visitor to a town centre. Public toilets which were located in the basement floor limits their usefulness for those reliant on mobility aids. Such a situation is much more difficult for wheelchair users, parents with prams and older adults. Furthermore; their location, inappropriate stalls do not fit the usage of all people. Improper form of wash-basin and lack of diaper changing facilities pose a problem for people with disabilities and parents with babies.

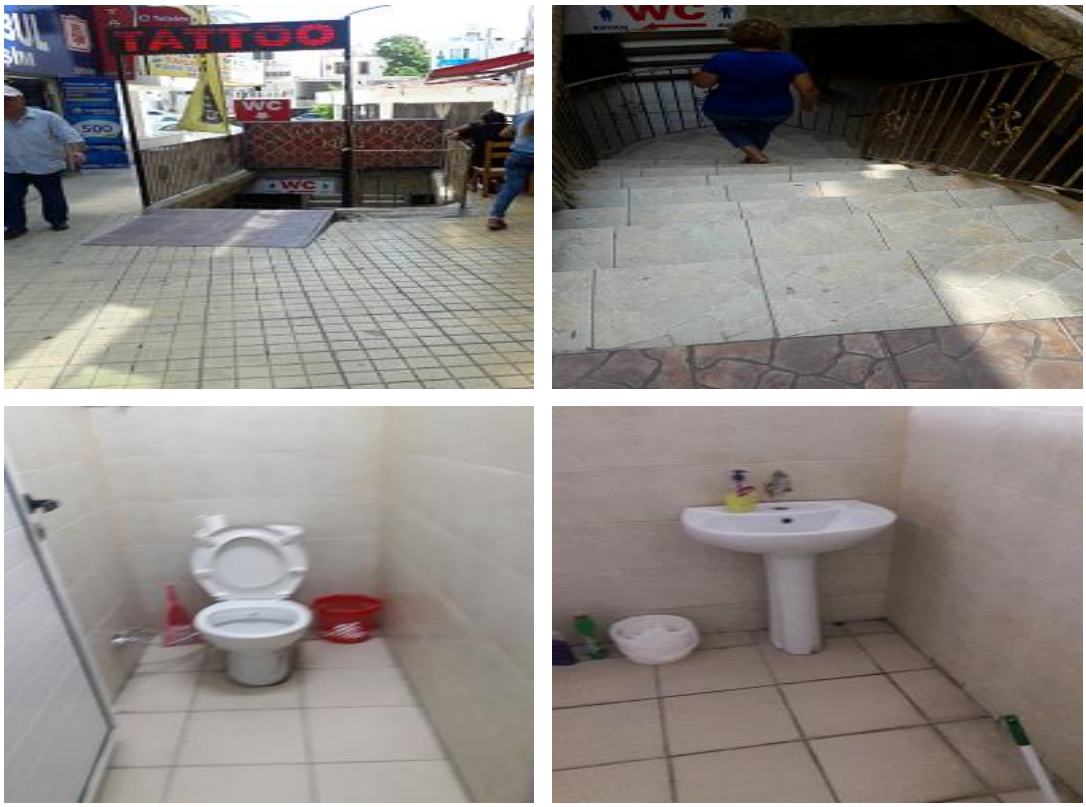


Figure 6.65: Views from inaccessible toilet facilities for the disabled person

In addition to these, the design of all street furnishing elements are not suitable for the use of people with disabilities and further, some important street furnishing elements were disregarded while the design of urban space. Poor landscaping and sitting elements make the usage uncomfortable for both able-bodied and disabled people and negatively impacts the level of inclusive access.

ATMs are not appropriate for the use of people with disabilities. If disabled people require to use ATM that was placed by the electricity association they have to go up troublesome stairs. The platform is also provided in front of the machine where there is no space to the side, the manoeuvre is much more awkward. The machine placed over the steep that a wheelchair user or short person is not able to reach.

Figure 6.66: Improperly designed ATM obstacle the disabled users

Based on the observation results, it can be emphasized that people with and without disabilities encounter diverse difficulties while using SD3 as a result of architectural barriers. t the following lines, social barriers were also discussed.

Like SD1 and SD2, Weak maintenance of SD3 is particularly limited to the mobility of people with disabilities and they become experience faulty socio-politic issues in a deeper sense.

Figure 6.67: Cracked and uneven surfaces of pedestrian crossings threaten pedestrians, especially users of wheeled devices

The results of observations were clarified that the attitudes of the public sector have negatively affect the quality of street space and decreases the functionality of desired facilities for all society. The laws and regulations concerning environmental

management is not proper and encourage public use. The weak and ineffective controlling attempts of the municipality is troublesome for the users of SD3. The observations were revealed that the private sector was not routinely controlled. For that reason, business owners are feeling flexible about the usage of the exterior environment and they filled the sidewalks with equipment as shop stalls, chairs, tables, signs, etc. and so width of sidewalk corridor become to be inappropriate for the pedestrian circulation.

Figure 6.68: Shop stalls that were placed by business owners obstacle pedestrian movement in the SD3

Attitudes of society are among the significant reasons that root environmental pressure for not only disabled, able-bodied people as well. Along the street, both able-bodied and disabled people designated car-parking facilities were installed at the edge of the left pavement, despite this, drivers parked their vehicles on the right sidewalk. These vehicles blocked the entrance way of the shops, forcing people to walk in the vehicle lane instead of safer sidewalks.

Figure 6.69: Parked vehicles blocked the entrance way to the shops

Figure 6.70: Parked vehicles on the sidewalk induced pushchair user women to walk in the vehicle lane

Eating/drinking something and shopping are overriding activities in SD3. The economic value of activities negatively influences users to consume in the street. Because, expensive prices offer unaffordable functions, especially for unemployed people.

As a result, the observation results were clarified that Atatürk Street is not accessible and usable for a wide range of users. Neither physical nor social environment do not comply with inclusive access needs for people with and without disabilities.

SD4-Atatürk Square And Its Near Vicinity

Atatürk Square is a civic and quay square where people generally use for getting together in terms of realizing diverse activities such as meeting, sitting and other socializing events. The square is also a significant node that connects Kyrenia Sea Front (Kordonboyu) with the Kyrenia Town Centre.

Figure 6.71: The location of Atatürk Square and its near vicinity

In the SD4, a total of 418 people behaviour were observed and documented on the behavioural maps. The table below summaries the distribution of observed users in order to gender and disability situation.

Table 6.13: Observed users profile in SD4

GENDER	Male	253
	Female	165
MOBILITY SITUATION	Able-bodied person	273
	Wheelchair/Scooter user	1
	People wıih walking deficiency	2
	People with hand and arm deficiency	2
	Pregnant women	1
	Parents with a pushchair	20
	People wıih heavy luggage	13
	Elderly people	77
	Children	27
	Other mobility deficiency	2

Concerning gender distribution, the number of males were more than female in the SD4. Because; big male immigrant worker and soldier user groups frequently use this zone of the Kyrenia Town Centre.

The observed users were also categorized in terms of their disability situation. While 273 people are able-bodied users, 145 people have any kind of mobility difficulty in the SD4. During the observations, 1 wheelchair user, 2 people with mobility deficiencies, 2 people with hand and arm deficiencies, 1 pregnant woman, 20 pushchair users, 13 people with heavy luggage, 77 elderly people, 27 children and 2 people with other mobility deficiencies were recorded.

The investigations revealed that almost all building entrances are inaccessible in the SD4. When disabled person need to use buildings, there impedes in entrance way. Common practice is single-steps to each shop above the level of the adjacent pavement that negotiate wheelchair/scooter users, parents with pushchairs and ambulant disabled people to enter buildings with their self-control. Based on the observations, it is recognized that there is just one building entrances owning a ramp with an ideal gradient which unsuitably covered and dimensioned without handrails. Narrow single step platforms were mostly considered for the building entrance arrangement, whether wheelchair or scooter users can not able to find enough space either self-propelling or being-pushed mode, there has to be a suitably dimensioned platform in front of the door. Lack of handrails and non-slip floor surfaces are a handicapped ambulant disabled person and older adults, they faced with problems regard to maintain their balance while using those entrance ways.

The majority of entrance doors are designed as spring-loaded self-closing door, disabled person can have difficulties getting through such doors. Users with wheeled devices have been observed receiving assistance to open the door.

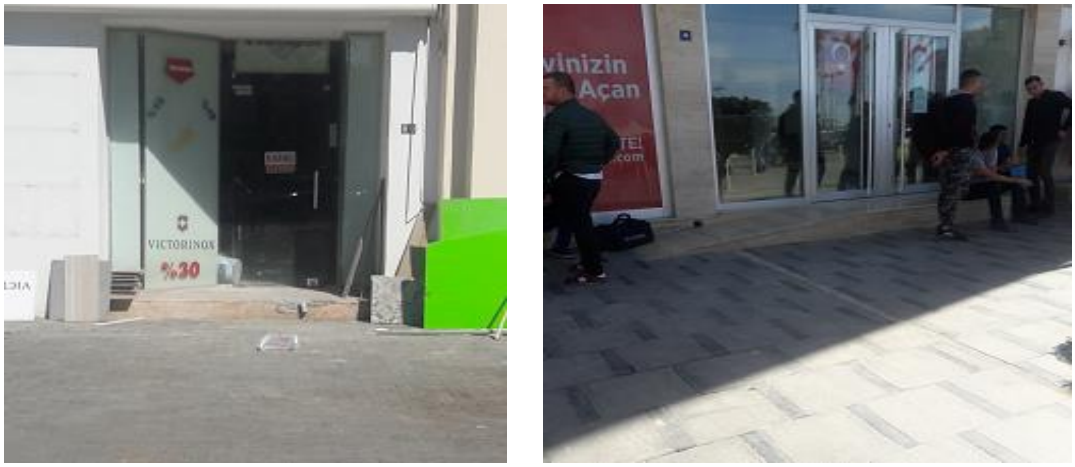


Figure 6.72: Unsuitable building entrances are confronted physically disabled people

In order to assess inclusive access of an urban square, the availability of pedestrian routes have to be argued. As it was seen observations, people with disabilities can not move easily and freely in Atatürk Square (SD4). Wheelchair users must be accompanied by someone else while travelling in the urban square. Atatürk square is covered with tiles which are hard covering material. Although, the material is firm and slip-resistance, the joints between the adjacent paving tiles are not suitable for inclusive design. Despite sidewalks are wide enough, the configuration of street furnishing elements obstacle users. The lighting elements and garbage bins were randomly positioned on the sidewalks, so they do not allow free passage for pedestrians.

Figure 6.73: Improper location of street furnishing elements create danger for pedestrians

In the SD4, traffic bollards were placed against the vehicle use of pedestrian routes. Instead of protecting pedestrians from hazards, they are open to probable pedestrian accidents. The wrong position of traffic bollards reduces the self-control and self-reliance of people with wheeled devices.

In the SD4, some sitting elements do not possess ideal measurements for the uses of society at large. Some of them are out of standards and not comply with inclusive design requirements. Folding chairs were placed at the opposite of a square that does not provide available uses for those who have mobility aids, or hand and arm deficiencies. Furhermore, sitting elements that were placed in the Atatürk square, have not backrest or armrest, so they are not comfortable for all people.

Figure 6.74: Views from the sitting elements in the SD4 (Atatürk Square)

Disabled people are not fully benefited from ATMs. The slot of mailboxes is not suitable, due to usage of wheelchair confined and very short person. Because, the machines are situated above the ground level, they are inaccessible to those people.

Figure 6.75: ATMs are not suitable for disabled users

Considering the existence of a bus stop in the KTC, it could be stated that there is a large distance between the SD4 and a bus stop. Not only wheelchair user and ambulant disabled people have a problem with the absence of bus stop, children, elderly people and especially those carrying heavy luggage are also being in a disadvantaged position.

The SD4 is not just a quay square offering leisure and recreation in the town centre. It is also an attraction pole which gets people together with opportunities of the seafront.

The absence of a barrier-free physical environment makes the quay square dysfunctional for a wide range of user groups. In order to define the certain situation of inclusion, further criteria concerning social environmental elements were measured for SD4.

Apart from other observed sub-districts, SD4 possesses a weak controlling process. The field survey results testified that a weak position of environmental management services is based upon the insufficient implementation of current laws and legislation against undesired behaviour of a society. Deficient parking control prompt user to flout rules by parking prohibited curb side zones in the SD4. Drivers usually tend to park their cars nearby rather than take advantage of municipal parking spaces. Whereas there is double-yellow line along the vehicle lane, they still use a towaway zone. Accordingly socio-cultural norms reduce inclusive access in the SD4.

Figure 6.76: Parked vehicles at towaway zones restrict pedestrian usage

Disrespectful behaviour of able-bodied society restricts utilisation of Atatürk square and its near vicinity. Although, people with mobility limitations can find a well-designed curb ramp in the SD4, the parked vehicles blocked its usage for pedestrians. As shown in the figure pushchair user woman has difficulties while using curb ramp, due to the existence of a parked vehicle in front of it. Disrespectful behaviour of a society is also evidence of a weak controlling process.

Figure 6.77: Disrespectful society blocked curb ramps with their parked vehicles

In terms of the socio-economic profile of people, the survey outcomes have shown that people with varied income level prefer to use distinct zones in the SD4. However; tourist-oriented menü prices of cafes and restaurants are too expensive for the local people. Within the boundaries of a sample area, there was not any bus stop, if people become to be more tired they can easily take taxi, because taxi station was located in the SD4. However; the prices of taxi services are also too expensive.

Figure 6.78: Activities may be varied in terms of the soci-economic profile of people in the SD4

As the survey results, observations were clarified that the low functional performance level of urban spaces in Kyrenia Town Centre even decrease the ability of both disabled and non-disabled people to access and use the outdoor environment. KTC fulfilled with various physical and social barriers which are hindered the mobility and self-reliance of urban space users, especially people with disabilities become unable to participate in social life.

6.5.2 Survey Findings

For the survey, in total 383 face-to-face interviews were completed. The survey findings were analyzed by using data editing and analyzing program of Statistical Package for the Social Sciences (SPSS) to interpret frequency and variance in the statistics. The frequency change statistics were employed to analyze collected data with percentages, arithmetic averages and standard deviations. Correlation analysis was used to test significant relationships between the perceived performance level and demographic features (e.g. age, health). Survey findings will be given in detail at the following lines.

Respondents' Profiles

In survey, the respondents' profiles were collected first to access their demographic features such as gender, age, education, socio-economic status and disability condition.

-Gender

A total 50,65% (194) female and 49,35% (189) male answered survey questions. The gender distribution of respondents indicated that there is not any significant differences between female and male users.

Table 6.14: Gender profile of respondents (n=383)

	No (n)	**Percentage (%)**
Gender		
Female	194	50,65
Male	189	49,35

The proportion of female users is almost equal to male users. Female is able to participate any facilites in town centre and they can give their opinions about any survey which is caried out in urban open space. Since the survey were conducted to the users during the day times, it is not possible to discuss about the ratio of women to man or safety of women at night.

-Age

The ages of survey respondents are vary. 10,44% of respondents are between the ages of 7-11; 16,71% (64) are 12-18; 31,85% (122) are 19-45; 22,98% (88) are 46-65 and 18,02 (69) are 65 and over.

Table 6.15: Age range of survey respondents (n=383)

	No (n)	**Percentage (%)**
Age (years)		
7-11	40	10,44
12-18	64	16,71
19-45	122	31,85
46-65	88	22,98
65 and over	69	18,02

A vast majority of survey respondents are younger adults between the ages of 19-45. This significant difference in terms of users' age is due to the relatively high population of local university students who frequently use the KTC.

-Education

According to results of a survey, a minority of participants are uneducated-literate. In general, KTC users who responded the survey graduated from primary school (34,46%); high school (30,55%) and university or post-graduate degree (29,77%).

Table 6.16: Education level of survey respondents (n=383)

	No (n)	Percentage (%)
Education level		
Uneducated-literate	20	5,22
Primary School	132	34,46
High Scool	117	30,55
University/Post-Graduate	114	29,77

The survey has not respondents by any illiterate person and the ratio of uneducated-literate people is lower than educated people. Uneducated people mainly include users groups who are immigrant workers and they are working in construction sites and industrial factories. The vast majority of primary school graduates compulsorily use the KTC as waiters, salesmen and shop-assistants in various occupations. Besides; the number of repondents who graduated from high school is almost equal to respondents with a university/post-graduate degree.

-Income level

Respondents had an monthly income less than 1000 TL are 30,55% (117) and others has income between 1001-2000 TL (22,45%) 2001-4000 TL (32,90%); 4001-6000 TL (11,23%) and 6000 TL and more (2,87%).

Table 6.17: Income level of survey respondents (n=383)

	No (n)	Percentage (%)
Monthly Income		
Less than 1000 TL	117	30,55
1001-2000 TL	86	22,45
2001-4000 TL	126	32,90
4001-6000 TL	43	11,23
6000 TL and more	11	2,87

In the days of survey conducted, the minimum wage is 2,365 TL in North Cyprus. While full time staff has income between the 1001-2000 TL, part time staff possess montly income less than 1000TL and some of them are university students who are working at cafes and restaurants as hour employee.

-Disability Situation

Both of disabled (39,16%; 150 users) and non-disabled (60,84%, 233 users) respondents answered survey questions. The distribution of 150 disabled respondents such as wheelchair/scooter users (10,67%); people with walking impairment (32%); people with hand and arm impairment (8%); pregnant women (11,33%); pushchair user (19,33%) and individulas with other types of disabilities (18,67%).

The majority of disabled respondents use assitive devices as walking aids, frames and canes in Kyrenia Town Centre. These respondents partially involve elderly people who needs such devices. Besides, the number of pushchair users and people with other types of disabilities (people with obesity, chronic illneses, etc.) is almost equal. The survey findings emphasize the diversity of the user population and requirements of proper design solutions towards utilization of people with varied mobilities.

Table 6.18: Respondent profile in terms of type and severity of their impairments (n=383)

	No (n)	Percentage (%)
Disability Situation		
Disabled	150	39,16
Able-bodied	233	60,84
Type of Disability (n=150)		
Wheelchair/Scooter user	16	10,67
Walking disabled (mobility with assistive devices)	48	32,00
People with hand and arm deficiencies	12	8,00
Pregnant women	17	11,33
Pushchair user	29	19,33
Others	28	18,67
If disabled person need help while going outside (n=150)		
Needed someone's help	7	4,67
Needed someone's help partially	56	37,33
Needed someone's help substantially	13	8,67
None	74	49,33

KTC restricts freedom of disabled users and they may need to be assissted by another person while using it. In order to determine this situation, the question was conducted to disabled respondents. Based on the results, around half of disabled respondents require help in some way while using KTC. The respondents who needs help and experience problems about their self-control, determined the degree of using help. While 4,67% (7) disabled respondents stated that they require to be assisted by someone. Others must be partially 37,33% (56) or substantially 8,67% (13) accompanied by somebody if they go outside.

- Purpose and Frequency of Town Centre Use

Purpose and frequency of Kyrenia Town Centre use was also asked to repondents, because the information about use might be significant signs for testing livability and quality in urban open spaces.

-Purpose of Use

Kyrenia Town Centre is used for diverse reasons. Some of the respondents stated that they prefered to use the town centre for several purposes. When the users were asked for what reasons they use Kyrenia Town Centre (KTC), it was determined that they primarily prefered to be in the town centre for working (28,98%), followed by shopping (25,59%), eating (25,33%) and socio-cultural activities (24,54%). Some of those prefer resting (17,75%), just passing through (12,53%), meeting with their friends or family (10,44%), and residing (7,57%).

Table 6.19: Purpose of use

	No (n)	**Percentage (%)**
Purpose of use KTC		
Residing	29	7,57
Passing through	48	12,53
Resting	68	17,75
Meeting	40	10,44
Working	111	28,98
Socio-cultural activities	94	24,54
Shopping	98	25,59
Eating	97	25,33

Although KTC has several meeting points and residential facilities, it was rarely used for meetings. That means the quality of the urban space is not sufficiently good.

-Frequency of Use

The frequencies of use were examined in detail with questions about how often, on which days, and how long users stayed on average (Table 6.20). Everyday users (29,77%) include employers in the town centre. The rest of people prefered to use the area several times per month for optional activities. The town centre is visited the most during weekends (42,04%). There are also respondents such as private business staff and residents who used it both weekdays and weekends (36,81%).

Densely used time periods were also questioned and participants mostly selected to benefit from public space opportunities during the middays (72,06%) and afternoons (71,28%). Respondents who are working or residing, used KTC in the morning. The area is very rarely used at nights as well (10,18%). When the results compared with the number of respondents who are residing (7,57%) in KTC, it is seen that the quality of urban spaces in the town center is not in a good condition for the night use.

Table 6.20: The distribution of respondents regarding frequencies of use

	No (n)	Percentage (%)
Frequency of use		
Everyday	114	29,77
Several times in a week	64	16,71
Once a week	65	16,97
Several times in a month	101	26,37
Very rarely	39	10,18
Days in use		
Weekdays	81	21,15
Weekends	161	42,04
Both weekdays and weekends	141	36,81
Time periods in use		
Morning (07:00-12:00)	156	40,73
Midday (12:00-14:00)	276	72,06
Afternoon (14:00-17:00)	273	71,28
Evening (17:00-21:00)	73	19,06
Night (21:00-07:00)	27	7,05
Duration of use		
0-2 hours	79	20,63
2-4 hours	182	47,52
4-6 hours	10	2,61
6-10 hours	52	13,58
More than 10 hours	60	15,67

The quality of urban open spaces influence the duration of activity. According to results; the average of time spent in the area was zero to two hours. Such abbreviated usage periods are sign of reduced activity and even comfort in the urban space.

- Accessibility and Movement Patterns

In order to achieve long-term accessibility and social inclusion in Kyrenia Town Centre, it is essential to provide continuity in mobility of users. Urban open spaces should be design to fit various types of transportation and seamless travel have to be

considered within the diverse modes of transport. Therefore; the survey was used to test accessibility and movement patterns in the area. The respondents were asked for how they access to the town centre and what do they think about the sufficiency of public transport. The survey clarified that respondents use diverse ways to access KTC. Most of the survey participants (73,63%) come to city centre with their private vehicles. Some of people (18,80%) prefered to use public transportation. A minority of participants (7,31%) prefered to walk for the access KTC.

When the questions about movement patterns were conducted, users stated that the main travel mode in KTC was walking rather than using motorized vehicles. It was thought that it is challenging to bring such vehicles into the town centre and to find parking spaces near desired activities. Since the majority of users are pedestrians in the KTC, pedestrian-oriented details are essential in providing inclusive access features.

Table 6.21: Accessibility and movement patterns

	No (n)	**Percentage (%)**
Access to City Centre (n=383)		
Public Transportation	72	18.80
Private Vehicle	282	73.63
Walk	28	7.31
Motored wheelchair/scooter	1	0.26
Travel Mode (n=383)		
Car (drive/passenger)	68	17.75
Cycle	17	4.44
Walk	215	56.14
Walk (with assistant)	45	11.75
Walk with pushchair	22	5.74
Wheelchair	10	2.61
Motored Wheelchair/Scooter	6	1.57
Public Transportation Sufficiency (n=383)		
Sufficient	42	10.97
Not Sufficient	341*	89.03

Table 6.21 (Continued)

Reason of insufficiency (n = 341)*		
Public Transportation vehicles	265	77.71
Bus stop	208	61.00
Other user's attitudes	84	24.63
Bus driver's attitudes	75	21.99

***The opinions of 341 respondents who founded public transfortation insufficient about the reasons of insufficiency

The most of users (89,03%) stated that the public transportation system have not sufficient functionality and poor availability for overall use. Those respondents also expressed that improper design of public transportation vehicles, inaccessible bus stops and negative attitudes of other users and bus drivers were among the reasons for the system's insufficieny (Table 6.21). Poor availability of public transportation services increases traffic congestion and car parking space demand in the KTC; it also decreases the safety and mobility of pedestrian users.

- Functional Quality/Performance and User Satisfaction about Inclusive Access

The satisfaction level of respondents was measured with hypothetical statements regarding the links between inclusive access indicators-adaptability, safety, comfort, dignity, density and autonomy and urban design consideration. The quality of physical and social environmental features of the KTC was divided into five performance levels of Likert Scale categories (item values):very bad (1), bad (2), moderate (3), good (4), very good (5).

The minimum and maximum length of 5-point Likert Scale categories were determined based on the score ranges, which were calculated by the total number of levels in the series equal gap width between levels (5-1=4). Then the total number of

levels was divided by the greatest value of the scale (4/5=0.8). Following that number one which is the least value on the scale was added for identifying the maximum value of each score ranges. Accordingly; the five performance levels were assigned the following gap widths for analysis of user satisfaction with the performance of inclusive access features in KTC (Azemati et al. 2011).

Table 6.22: Gap width between of quintet likert scale (Azemati et. al, 2011)

Item	Item description	Score Range
5	Very good	4.21-5.00
4	Good	3.41-4.20
3	Moderate	2.61-3.40
2	Bad	1.81-2.60
1	Very bad	1.00-1.80

- If the value is ≤ 2.60, the quality is bad
- If the value is $2.61 \leq \bar{x} \leq 3.40$, the quality is moderate
- If the value is > 3.40, the quality is good

The average of quantitative responses was calculated based on the arithmetic mean value ($\bar{x}$), standard deviations (S), minimum and maximum value on a scale of 1 to 5. The measurement results were also evaluated in terms of their qualitative meaning. In qualitative terms, the performance level was identified: If the mean value ($\bar{x}$) is calculated less than 2.60, the quality is bad and users are not satisfied with the KTC's performances. If the mean value ($\bar{x}$) is founded more than 3.40, the quality is good and users are satisfied.

Physical Environmental Quality and Performance

The respondents evaluate the quality of three main components and eight sub-components of the physical environment: building entranceways, pedestrian routes (sidewalks and pathways, curb ramps, pedestrian crossings), and open space facilities and services (car parking, street furnishing elements, public toilets, signage).

-Building entrances and environs

The quality of entrances and their environs were evaluated in terms of width, gradient, floor covering and ramp location. The respondents evaluated the width of the entrance ways' adaptability, safety, comfort, dignity and autonomy as "bad". When it was asked about the compliance of entrance width with a density, both disabled and non-disabled respondents stated that the quality of entranceway width is "very bad"in terms of overall usage density (1,67).

The quality of entrance way gradients and surfaces were also asked to respondents and their quality is founded as bad in terms of all indicators. Respondents also reported that the location of the ramps at the entrance ways have not provided dignity in uses, especially for wheelchair confined people. These results confirmed that building entrances and their environs produce problematic use in KTC (Table 6.23).

Table 6.23: The opinions of respondents regarding building entrances (n=383)

Building entrances and environs	$\bar{x}$	**S**
Width of entrance way		
Adaptability	2,32	1,12
Safety	2,29	1,10
Comfort	2,04	1,00
Dignity	2,11	1,02
Density	1,67	0,86
Autonomy	2,37	1,16
Gradient		
Adaptability	2,31	1,11
Safety	2,21	1,12
Comfort	2,16	1,10
Dignity	2,17	1,09
Autonomy	2,34	1,17
Surface		
Adaptability	2,17	0,89
Safety	2,09	0,91
Comfort	1,99	0,87
Dignity	2,12	0,86
Autonomy	2,19	0,90
Ramps Location		
Dignity	1,91	0,99

In addition to these; the general evaluation was done over the average of functional quality is “bad” with the value of 2,10 in turn this means building entrances and environs are non-compliance to inclusive access requirements.

Table 6.24: The opinions of respondents related to building entrances and close surroundings (n=383)

	N	$\bar{x}$	S	Min	Max
Adaptability	383	2,27	0,91	1,00	4,00
Safety	383	2,20	0,88	1,00	4,00
Comfort	383	2,07	0,84	1,00	4,00
Dignity	383	2,08	0,84	1,00	4,00
Density	383	1,67	0,86	1,00	4,00
Autonomy	383	2,30	0,95	1,00	4,00
Building entrances and environs	383	2,10	0,82	1,00	3,83

Pedestrian Routes

Pedestrians need a connected network that joins all origins to all destinations without any interruption and disconnection. Providing good pedestrian facilities is critical enticing residents and visitors of the town centre, the performance measurement will help to identify the current condition of improved pedestrian routes for those facilities. In survey, inclusive access has been evaluated with reference to quality of pedestrian routes such as sidewalks, curb ramps and pedestrian crossings. It was expected from the respondents to give their opinions about the functional quality of pedestrian routes by scoring between the scale of 1 to 5.

-Sidewalks and Pathways

Respondents were asked to identify perfromance of sidewalks and pathways in terms of sidewalk width, gradient and surface material quality. While respondents evaluated the relationship between the usage density and width, the mean value is founded as 1,46 that means the quality is very bad. The results show that sidewalks widths do not include inclusive access features and they are troublesome for almost all users including both disabled and able-bodied people.

According to respondents while the sidewalks' gradients are not comfortable (2,50). They are founded as delivering usage to respondents moderately adaptable, safe, dignity and autonomous. The condition of sidewalks and pathway gradients in KTC is better than the quality of their widths. But they do not fully comply with the inclusive access design features, it is essential to improve gradient quality with more suitable design applications.

Table 6.25: The opinions of respondents about the quality of sidewalks width, gradient and surface material (n=383)

Sidewalks and Pathways	$\bar{x}$	**S**
Width		
Adaptability	2,36	0,73
Safety	2,35	0,72
Comfort	2,02	0,76
Dignity	2,07	0,74
Density	1,46	0,67
Autonomy	2,37	1,07
Gradient		
Adaptability	2,72	0,89
Safety	2,69	0,91
Comfort	2,50	0,95
Dignity	2,76	0,81
Autonomy	2,64	1,05
Surface		
Adaptability	2,01	0,76
Safety	2,01	0,71
Comfort	1,83	0,79
Dignity	2,02	0,79
Autonomy	2,01	0,94

The quality of sidewalk surfaces has an impact on the experiences of users in terms of design criterion regarding surface materials selection, changes in level and dimensions of gaps/openings. Based on the survey results, the opinions of respondents about the

different functional quality indicators was nearly same. Sidewalks' surfaces were mostly graded with 2 and the condition of surface quality is bad for the survey participants.

The opinions of respondents were taken up for the evaluation of general situation of sidewalks. The overall quality of sidewalks is calculated as 2,15-"bad". When the results were analysed through general statements based on the relationships of functional quality indicators with sidewalk design, it is seen that density is "very bad". However, rest of the qualities have been assessed with the same degree and sidewalks are in bad conditions in terms of adaptability, safety, comfort, dignity and autonomy.

Table 6.26: The general opinions of respondents with regard to sidewalks quality at KTC (n=383)

Sidewalks	**N**	$\bar{x}$	**S**	**Min**	**Max**
Adaptability	383	2,36	0,64	1,00	4,00
Safety	383	2,35	0,60	1,00	4,00
Comfort	383	2,12	0,65	1,00	4,00
Dignity	383	2,28	0,64	1,00	4,00
Density	383	1,46	0,67	1,00	4,00
Autonomy	383	2,34	0,90	1,00	4,00
Sidewalks	383	2,15	0,59	1,00	3,83

Accordingly; sidewalks and pathways are not accessible and usable for KTC users and their qualities have to be increased with the compliances of pedestrian volumes and principles on inclusive access.

-Curb Ramps

Curb ramps are significant urban open space design elements which improve accessibility and usability of the town centre. The qualities of ramps' width, slope and surfaces were asked to the respondents.

Table 6.27: The opinions of respondents about the quality of curb ramps (n=383)

Curb Ramps	$\bar{x}$	**S**
Curb Ramp Width		
Adaptability	2,43	0,74
Safety	2,45	0,74
Comfort	2,28	0,71
Dignity	2,39	0,75
Density	1,98	0,70
Autonomy	2,42	0,91
Curb Ramp Slope		
Adaptability	2,48	0,66
Safety	2,45	0,66
Comfort	2,40	0,67
Dignity	2,28	0,80
Autonomy	2,40	0,87
Curb Ramp Surface		
Adaptability	2,26	0,76
Safety	2,14	0,69
Comfort	2,06	0,73
Dignity	2,21	0,71
Autonomy	2,25	0,89

When the calculated mean value of curb ramp design features was compared, the lowest score was founded for the relationships between the curb ramp width and people density (1,98). In addition to this, ramp surfaces are evaluated with the lower degree than ramp width and slope.

The general measurement of the quality of curb ramps was found to be "bad" with a mean value of 2,27. Results of this measurement indicate that curb ramps are not properly designed for the uses of public. Curb ramps do not suit to the needs of neither able-bodied nor disabled users.

Table 6.28: The general opinions of respondents regarding the qualities of curb ramps at KTC (n=383)

	N	$\bar{x}$	**S**	**Min**	**Max**
Adaptability	383	2,39	0,63	1,00	4,00
Safety	383	2,35	0,61	1,00	4,00
Comfort	383	2,24	0,59	1,00	4,00
Dignity	383	2,29	0,63	1,00	4,00
Density	383	1,98	0,70	1,00	4,00
Autonomy	383	2,36	0,81	1,00	4,33
Curb Ramps	383	2,27	0,57	1,00	4,00

-Pedestrian Crossings

The functional quality of pedestrian crossings was analysed and the attitudes of repondents concerning the situations of pedestrian crossings' dimensions and surface were assessed. When the quality of pedestrian crossings' dimensions and surface material was asked of respondents, the quality of pedestrian crossings' dimensions is not founded in a good situation in terms of usage density (2,01) and comfort (2,52).

Table 6.29: The opinions of respondents about pedestrian crossings (n=383)

Pedestrian Crossings	$\bar{x}$	**S**
Dimensions		
Adaptability	2,87	0,78
Safety	2,88	0,82
Comfort	2,52	0,91
Dignity	2,63	0,98
Density	2,01	0,88
Autonomy	2,68	1,04
Surface Material		
Adaptability	2,38	0,83
Safety	2,15	0,77
Comfort	1,92	0,76
Dignity	2,12	0,85
Autonomy	2,28	0,97

Moreover; pedestrian crossings' dimensions qualities as adaptability, safety, dignity and autonomy were considered with the moderate degree. Dimensions of pedestrian crossings are not in a bad condition and they are partially compatible with safety, self-respect and self-control needs of people. Besides, respondents evaluated quality of pedestrian crossings' surfaces with the same extend and whole of them are in bad condition.

Table 6.30: The opinions of respondents about pedestrian crossings in general (n=383)

	N	$\bar{x}$	**S**	**Min**	**Max**
Adaptability	383	2,63	0,68	1,00	4,50
Safety	383	2,51	0,67	1,00	4,00
Comfort	383	2,22	0,69	1,00	4,50
Dignity	383	2,38	0,71	1,00	4,50
Density	383	2,01	0,88	1,00	4,00
Autonomy	383	2,48	0,95	1,00	5,00
Pedestrian Crossings	383	2,37	0,67	1,00	4,42

As shown in the table 6.30, the statistical average of opinions was calculated for the determination of perceived performances of pedestrian crossings. In general pedestrian crossings' performances are founded as "bad" by the participants of a survey. This shows that there is a requirement for further provision of the pedestrian crossings' quality.

-Open Space Facilities and Services

Respondents were inquired to identify the performance level of open space facilities and services at KTC. The quality of car parking, street furnishing elements, public toilets and signages were evaluated. As mentioned before, there is not bus stop in the case study area and closest bus stop is located outside of the case study area and so the question related to bus stops were omitted and not asked. Following that, the survey results related to performances of car parking, street furnishing elements, public toilets and signages will be identified in the following lines.

Car parking

The survey results imply that the insufficient public transportation system has increased traffic congestion and car parking demand in the town centre. As a result, the provision of car parking facilities have not reflected usage density. When the statement was asked to respondents for grading they were determined that number of the disabled designated parking facilities are "very bad" in terms of the overall usage density at KTC (1,67).

The dimensions of designated parking lots were also evaluated and the respondents reported a moderate level of satisfaction with the dimensions of parking places in terms

of the qualities of adaptability (3,02), comfort (2,91) and safety (3,05). Therefore; it could be stated that the size of parking lots are partially usable to all people.

The respondents revealed that parking lots location are bad and they do not offer dignity in use. In addition to these; one of the aspects which creates unavailable use, is related to surface materials of parking lots. Surfaces of parking lots still offer uncomfortable uses in KTC, due to the existence of urban space provision. However; car parking surfaces are partially provided adaptability, safety, comfort, dignity and autonomy in function and such qualities were evaluated with a moderate degree. Based on the outcomes of a survey, car parking facilities have to be provisioned.

Table 6.31: The attitudes of respondents for the designated parking facilities (n=383)

Car Parking	$\bar{x}$	**S**
Number		
Density	1,67	0,85
Dimensions of parking lots		
Adaptability	3,02	0,86
Safety	3,05	0,85
Comfort	2,91	0,86
Autonomy	2,96	0,92
Location of parking lots		
Dignity	2,12	0,95
Surfaces		
Adaptability	2,72	0,95
Safety	2,68	0,94
Comfort	2,57	0,93
Dignity	2,62	0,96
Autonomy	2,72	0,95

Considering the mean value of spatial qualities, the parking spaces has not been coherent to usage density. It was founded that they are very bad in terms of usage density.

While, the arithmetic average of other functional qualities was calculated, it was founded that people are not satisfied with the parking spaces in terms of adaptability, comfort, safety and autonomy. The unsuitable design applications cause problems related to self-control, especially disabled and elderly people who may require help to gain access to enter or leave the vehicle. Accordingly, car parking places are not sufficient and their weak performances decrease the level of inclusive access.

Table 6.32: The overall opinions of respondents related to performances of car parking areas (n=383)

	N	$\bar{x}$	**s**	**Min**	**Max**
Adaptability	383	2,87	0,78	1,00	4,50
Safety	383	2,87	0,78	1,00	4,50
Comfort	383	2,74	0,79	1,00	4,50
Dignity	383	2,37	0,78	1,00	4,00
Density	383	1,67	0,85	1,00	4,00
Autonomy	383	2,84	0,82	1,00	4,50
Car Parking	383	2,56	0,69	1,00	4,00

-Street furnishing elements (Resting Facilities, ATMs, lighting elements, etc.)

The functional quality of urban spaces influences the existing performances of street furnishing elements. The KTC's street furnishing elements mainly include resting facilities, ATMs, lighting elements, garbage bins and traffic bollards. The survey was carried out for the determination availability of the number, location and dimensions of street furnishing elements.

When the survey questionnaire also provided information that most of the users are not satisfied with the location and dimensions of street furnishing elements. The street furnishing elements are not suitable to use and cause safety problems as well. When, the respondents were asked about their opinions regarding the quality of streets furnishing elements, KTC users mostly cited that they are not satisfied with the location and dimensions of street furnishing elements (2.02). According to respondents, both of location and dimension of street furnishing elements do not offer convenient or flexible usage and they cause safety problems. The number of street furnishing elements are not sufficient for the town centre usage (density:1,81). Street furnishing elements have bad quality and their inadequate performance negatively influences the dignity and self-control of KTC users. More useful and accessible street furnishing elements are urgently needed in the town centre.

Table 6.33: The performances of street furnishing elements at KTC (n=383)

	$\bar{x}$	S
Number of street furnishing elements		
Density	1,81	0,91
Location of street furnishing elements		
Adaptability	2,31	0,87
Safety	2,34	0,87
Comfort	2,23	0,88
Dignity	2,30	0,89
Autonomy	2,32	1,00
Dimensions of street furnishing elements		
Adaptability	2,50	0,86
Safety	2,45	0,85
Comfort	2,25	0,94
Autonomy	2,41	1,02

Public Toilets

Since public toilets have significant role in the formation of inclusive access, the questions related to public toilet's design were conducted to KTC users. In order to define the people's intentions about the quality of public toilets, availability of location and numbers of those facilities were questioned.

Table 6.34: The opinions of respondents to public toilets (n=383)

	$\bar{x}$	s
Location of public toilets		
Adaptability	1,41	0,64
Safety	1,37	0,61
Comfort	1,36	0,57
Dignity	1,40	0,60
Autonomy	1,48	0,75
Number of public toilets		
Density	1,72	0,82

The survey results implied that well-designed toilet facilities are still absent in the town centre. Most of the survey respondents selected 1 on the Likert scales for all public toilet qualities. From the perspective of users, KTC has not provided seamless accessibility. Lack of accessible toilet facilities is problematic for establishing inclusive access in the KTC.

Signages

Poor signage is the source of legibility problems which causes orientation and mobility difficulties in urban open spaces. Installation of effective signage is essential to sustain inclusive access in the town centre. In this regard, it is required to measure the performance of signages as well.

Table 6.35: The opinions of respondents in terms of signage quality (n=383)

	$\bar{x}$	S
Location of signages		
Adaptability	2,84	0,94
Safety	2,85	0,91
Comfort	2,61	1,00
Dignity	2,65	0,99
Autonomy	2,75	1,06
Characteristics of signages		
Adaptability	3,05	0,96
Safety	3,08	0,93
Comfort	3,03	0,88
Dignity	3,12	0,95
Legibility	3,43	0,95
Autonomy	3,19	1,00

Signage location is founded more problematic than signage characteristics. The respondents evaluated the functional performances of signage at a moderate level in terms of adaptability, safety, comfort and dignity; meaning signs are only partially installed in positions that suit usage. KTC users also inferred that the legibility of signage was in a good condition.

Table 6.36: The opinions of respondents in terms of signage quality in general (n=383)

	N	$\bar{x}$	S	Min	Max
Adaptability	383	2,94	0,86	1,00	5,00
Safety	383	2,96	0,83	1,00	5,00
Comfort	383	2,82	0,87	1,00	5,00
Dignity	383	2,88	0,90	1,00	5,00
Legibility	383	3,43	0,47	0,50	2,50
Autonomy	383	2,97	0,64	0,67	3,33
Signages	383	3,00	0,71	0,86	4,31

Social Environmental Quality

Social environmental quality was evaluated in terms of socio-politic, socio-cultural and socio-economic environmental features of inclusive access.

-Socio-politic features

Routine maintenance and ongoing evaluation are essential to establish and sustain the long-term effects of inclusive access. Public authorities-both governmental and local-is a significant contributor of inclusive access and so the impacts of socio-politic features have been assessed. The performance of maintenance and management services were measured. People continue to face challenges in the urban spaces of KTC, therefore respondents evaluated the socio-political quality as bad. Lack of maintenance or poor maintenance causes problems related to usage and produce safety risks especially for disabled and elderly users at KTC.

Table 6.37: The opinions of respondents regarding the quality of maintenance services (n=383)

	$\bar{x}$	S
Maintenance Services		
Adaptability	2,36	0,95
Safety	2,22	0,92
Comfort	1,96	0,87
Dignity	2,14	0,94
Autonomy	2,33	0,99

Management Services

The management processes are central to urban design and help to maintain and enhance inclusive access and the public sector has a key role in the management of urban centres. In order to promote inclusive access, the public sector must regulate its

day-to-day management activities and they have to interest with securing and controlling high quality in urban centres.

Regarding results of the questionnaire survey, participants evaluated performances of management services with a lower degree. Management services are not provided adaptability (2,27); safety (2,23); dignity (2,24) autonomy (2,33) and comfort (2,04) needs of people while using KTC. All these qualities are founded as “bad” (Table 6.38).

Table 6.38: The opinions of respondents regarding management services (n=383)

	$\bar{x}$	S
Adaptability	2,27	0,88
Safety	2,23	0,90
Comfort	2,04	0,86
Dignity	2,24	0,94
Autonomy	2,33	0,95

Based on the survey results public sector is not being effective in controlling the process. While the public sector is a significant contributor within the development of inclusive access, there is a lack of good management for the established environment. Non-statutory attitudes of thepublic sector negatively influence the quality of urban spaces.

-Socio-cultural features

Considering the performance test results related to the availability of socio-cultural norms, it can be said that users of KTC, including both able-bodied and disabled people, are negatively influenced by the attitudes of society. Since the performance

value of quality was founded as ‘bad’, survey participants affirmed that the situation of the socio-cultural norms was an inconvenience to their dignity (Table 6.39).

Table 6.39: The opinions of respondents about socio-cultural features (n=383)

	$\bar{x}$	S
Socio-cultural norms		
Dignity	2,08	0,94

In addition to these, it should be noted that the main reason of undesired socio-cultural aspects is dependent on the legistlative enforcement. Therefore; the necessity of stronger and more influential legislation is inevitable.

-Socio-economic features

The ability to lead a city life restricted by the incapacity of the environment to accomodate changing needs in terms of the socio-economic profile of the user. The literature survey revealed that an inflexible environment influence the choices of urban space users and so the economic value of an activity must be affordable by people having diverse income levels.

When, it was asked about the affordability of function/urban space facilities, it is seen that people are not satisfied with the quality of socio-economic issues. The survey participants have intentions that urban space facilities are not affordable and further charges of public services reduced self-esteem and self-control for the town centre usage.

Table 6.40: The opinions of respondents regarding affordability of urban space facilities (n=383)

	$\bar{x}$	S
Affordability of urban space facilities		
Dignity	2,50	0,95
Autonomy	2,50	1,04

-Testing a Perceived Level of Inclusive Access with Correlation Analysis

Correlation analysis was completed to find any relationships between the variables. Statistical inferences are concerned with making inferences about the population based on a demographic characteristic (age, gender and health) of a sample population. T-test was used to define some significant differences in scoring patterns which were found between the responses of different user groups. Statistical inferences were done by considering the population correlation coefficient (p-value) in t-tests.

If the p-value is smaller than the significance level (α:0.05), the correlation is statistically significant and there is a linear relationship between the attitudes of sample population regarding perceived performance level. If the p-value is bigger than the sinificance level, correlation is not statistically significant and there is not a linear correlation between the attitudes of the sample population regarding perceived performance level.

For the evaluation of inclusive access of KTC, the functional quality and performance were examined gender point of view. The number of the survey participants are almost equal in terms of gender. When the relationship between the physical environmental quality and gender was tested, it is seen that there are not any meaningful statistical

differences between the attitudes of male and female users. Both male and female users are satisfied with the overall quality of the physical environment at a moderate level.

Table 6.41: The physical environmental quality in terms of gender differences

	N	$\bar{x}$	S	Min	Max	t / F	p	Difference
GENDER								
Female	194	2,61	0,53	1,66	3,70	-1,803	0,072	
Male	189	2,71	0,59	1,61	3,72			

**p<0,05*

When the responses of user groups were compared for their social environmental qualities, significant statistical difference was founded that male users are more satisfied with the KTC's functional performance than female users.

Table 6.42: The social environmental quality in terms of gender differences

	N	$\bar{x}$	S	Min	Max	t / F	p	Difference
GENDER								
Female	194	1,75	0,55	0,87	2,70	-5,378	0,000*	
Male	189	2,08	0,63	0,97	3,30			

**p<0,05*

KTC has been mostly used by people having age between the range of 19-45 who are younger adults. Elderly people and children are more dissatisfied with the performance and quality of the physical environment than teenagers, younger adults and adults. In turn, this means that elderly people and children feel more excluded than other user groups. The physical environmental quality must be upgraded by considering more

about user differences, especially children and elderly people needs have to be considered more.

Table 6.43: The relationship between the physical environmental quality and age range groups

	N	$\bar{x}$	S	Min	Max	t / F	P	Difference
AGE								
7-11	40	2,31	0,51	2,05	3,32	20,013	0,000*	1-2,1-3
11-18	64	2,91	0,46	2,25	3,66			1-4
19-45	122	2,76	0,53	1,66	3,70			2-5,3-5
46-65	88	2,79	0,60	1,61	3,72			4-5
Over 65	69	2,29	0,42	1,76	2,89			

**p<0,05*

When the responses of user groups were evaluated for their social environmental quality, significant statistical differences showed that children are more dissatisfied with the KTC than other age groups and the social environmental quality is very bad for children.

Table 6.44: The relationship between the social environmental quality and age range groups

	N	$\bar{x}$	S	Min	Max	t / F	p	Difference
AGE								
7-11	40	1,29	0,85	0,87	2,97	14,394	0,000*	1-2,1-3
11-18	64	1,97	0,38	1,42	2,50			1-4,1-5
19-45	122	2,06	0,64	0,97	3,30			
46-65	88	1,98	0,55	1,13	2,98			
Over 65	69	1,88	0,42	1,07	2,80			

**p<0,05*

According to survey findings, there are not any significant statistical differences between the attitudes regarding the physical environmental quality of the KTC users with varied economic status and so the perceived performance level of physical environmental quality does not change in terms of socio-economic profile.

Table 6.45: The relationships between the social environmental quality and economic profile of the user

	N	$\bar{x}$	S	Min	Max	t / F	p	Difference
Monthly income								
Less than 1000 TL	117	2,63	0,55	2,05	3,66	2,489	0,060	
1001-2000 TL	86	2,62	0,66	1,66	3,71			
2001-4000 TL	126	2,76	0,52	1,81	3,72			
Over 4001 TL	54	2,54	0,53	1,61	3,61			

**p<0,05*

The survey outcomes showed that KTC users with the different economic profile are feeling themselves as excluded in terms of social environmental quality, however people with high and low income levels are more dissatisfied than middle-income user groups. It is thought that the significant statistical difference is the reason fort he expensive charges of public services.

Table 6.46: The relationship between the social environmental quality and economic profile of the user

	N	$\bar{x}$	S	Min	Max	t / F	P	Difference
Monthly income								
Less than 1000 TL	117	1,79	0,69	0,87	3,12	9,520	0,000*	2-4
1001-2000 TL	86	1,91	0,49	1,07	2,78			3-4
2001-4000 TL	126	2,12	0,59	0,97	3,30			
Over 4001 TL	54	1,69	0,51	1,13	2,87			

**p<0,05*

The survey results are also tested by making a comparison between the opinions of disabled and able-bodied users. When the responses of disabled and able-bodied user groups were compared for the physical environmental quality, significant statistical differences were founded that able-bodied people are more satisfied with the KTC's performance than the disabled people. While the disabled person evaluated the physical environmental quality as bad, able-bodied people considers the physical environment quality and performance as good in terms of inclusive access issue.

Table 6.47: The relationship between the physical environmental quality and disability situation

	N	$\bar{x}$	S	Min	Max	t / F	p	Difference
Disability Situation								
Disabled	150	2,52	0,50	1,61	3,70	-4,097	0,000*	
Able-bodied	233	2,75	0,58	1,61	3,72			

p<0,05

Despite the able-bodied user are more satisfied than the disabled ones for the physical environmental quality, both of the user groups evaluted the quality of the social environment in a similar way. The meaningful statistical differences are not founded. Both user groups were mentioned that the social environmental quality is ‘bad’.

Table 6.48: The relationship between social environmental quality and disability situation

	N	$\bar{x}$	S	Min	Max	t / F	P	Difference
Disability Situation								
Disabled	150	1,85	0,50	0,87	2,97	-1,661	0,098	
Able-bodied	233	1,96	0,68	0,87	3,30			

**p<0,05*

It comes out from the results of correlation analysis that the satisfaction of users are varied in terms of usage periods. According to the survey results; private business staff and residents were users of KTC on both weekdays and weekends and visitors mostly visited the town centre during weekends. Correlation findings revealed that employees and resident are more satisfied with the physical environment quality than visitors.

Table 6.49: The relationship between physical environmental quality and days in use

	N	x	S	Min	Max	t / F	P	Difference
Days in use								
Weekdays	81	2,84	0,50	1,82	3,71	19,200	0,000*	1-2
Weekends	161	2,46	0,52	1,61	3,66			2-3
Both weekdays and weekends	141	2,78	0,58	1,66	3,72			

**p<0,05*

The correlation results also showed that there is significant statistical difference in the opinions of people who use KTC on different days. Private business staff, residents and visitors are dissatisfied with the social environmental quality. However; the dissatisfaction level of users is different for those user groups. When the responses of those user group were compared it was determined that visitors are more dissatisfied than the staff and residents.

Table 6.50: The relationship between the social environmental quality and days in use

	N	$\overline{x}$	S	Min	Max	t / F	P	Difference
Days in use Weekdays	81	1,96	0,63	1,03	3,30	14,141	0,000*	
Weekends	161	1,73	0,59	0,87	2,80			
Both weekdays and weekends	141	2,09	0,57	0,97	3,27			

**p<0,05*

Duration of activity has a strong relationship between the inclusive access features. When the ideas regarding the duration of activity were tested, it was noticed that people who prefer to stay between 0-2 hours and 2-4 hours are more dissatisfied from physical environmental quality than people staying more than 4 hours. Accordingly; visitors are more satisfied than residents and employers in KTC.

Table 6.51: The relationship between the physical environmental quality and duration of use

	N	$\bar{x}$	S	Min	Max	t / F	p	Difference
Duration of use								
0-2 hour	79	2,50	0,48	1,61	3,48	5,079	0,007*	1-3
2-4 hour	182	2,67	0,59	1,72	3,72			
More than 4 hours	122	2,75	0,56	1,66	3,71			

**p<0,05*

The attitudes of respondents regarding the social environmental quality were analysed according to answers which were given about the duration of activity. People who use KTC more than 4 hours, including mostly employers, are more satisfied with the social environmental quality than visitors staying at KTC between 0-4 hours.

Table 6.52: The relationships between social environmental quality and duration of use

	N	$\bar{x}$	S	Min	Max	t / F	p	Difference
Duration of use								
0-2 hour	79	1,81	0,50	1,07	2,80	4,375	0,013*	1-2
2-4 hour	182	1,87	0,66	0,87	3,12			2-3
More than 4 hours	122	2,04	0,58	0,97	3,30			

**p<0,05*

People who access town centre by public transport or private vehicles are more satisfied with physical environmental quality than those arriving on foot. Since most of the respondents were pedestrians, this result confirmed that the physical environmental quality and performance of KTC is not suitable for pedestrian use.

Table 6.53: The relationship between physical environmental quality and ways of access to KTC

	N	$\bar{x}$	S	Min	Max	t / F	p	Difference
Way of access to KTC								
Public Transportation	72	2,08	0,46	1,13	3,12	3,461	0,032*	1-2
Private vehicle	282	1,88	0,64	0,87	3,30			2-3
Walk	28	1,80	0,60	1,07	2,97			

**p<0,05*

The social environmental quality was tested by considering the responses of pedestrians and vehicle drivers. There is a significant statistical difference between the attitudes of pedestrian users and vehicle drivers in KTC. While, pedestrians and public transportation users are moderately satisfied with the social environmental quality, vehicle drivers are not satisfied with the social environmental quality. This response can be shown as an evidence that the necessary arrangements for the use of parking spaces have not been made.

Table 6.54: The relationship between the social environmental quality and ways of access

	N	$\bar{x}$	S	Min	Max	t / F	p	Difference
Ways of access to KTC								
Public Transportation	72	2,86	0,43	1,72	3,71	8,890	0,000*	1-2
Private Vehicle	282	2,59	0,59	1,61	3,72			2-3
Walk	28	2,87	0,48	1,82	3,47			

**p<0,05*

Availability of public transportation facilities is one of the determinants in the definition of inclusive access. There was the difference between the responses of people who had different opinions about the sufficiency of public transportation facilities. People with the opinion of public transportation facilities are not sufficient, evaluated the physical and social environmental quality with a lower degree than

others considering public transportation is sufficient. According to 42 people who say public transportation facilities were sufficient, physical environmental quality has a good performance level. Those respondents who said that the physical environment quality was bad also found public transportation not sufficient.

Table 6.55: The relationship between opinion of respondents regarding public transportation sufficiency and physical environmental quality

	N	x	S	Min	Max	t / F	p	Difference
Sufficiencyof public transporation facilities								
Sufficient	42	3,46	0,32	2,41	3,72	11,151	0,000*	
Insufficient	341	2,56	0,51	1,61	3,70			

**p<0,05*

People with the opinion of public transportation facilities sufficient and insufficient stated that social environmental quality is not good. But people who responded public transportation is not sufficiently work evaluated social environmental quality worse than people who founded transportation facilities sufficient.

Table 6.56: The relationship between the opinions of respondents regarding public transportation sufficiency and social environmental quality

	N	$\bar{x}$	S	Min	Max	t / F	p	Difference
Sufficiency of public transportation facilites								
Sufficient	42	2,51	0,42	1,58	2,97	7,043	0,000*	
Insufficient	341	1,84	0,59	0,87	3,30			

**p<0,05*

Accordingly survey results ascertained weak situation of both physical and social environmental quality that do not conform with the required design considerations and issues of inclusive access.

6.6 Summary of the Chapter

The Kyrenia Municipality had partially rehabilitated KTC to upgrade the quality of urban spaces for both able-bodied and disabled users. In this chapter, POE was carried out for the assessment of upgraded KTC and it was used to test the level of inclusive access in the town centre. POE introduced as a diagnostic tool which is also reviewed the outcomes of the study and it is primarily focused on the densely used urban open space of KTC and the evaluation model was implemented for those settings.

Academic and in-depth POE work was carried out through representative samples in the purpose of measuring the level of inclusive access for people with and without physical disabilities. Throughout the post-occupancy evaluation, the physical and social environmental features of urban spaces were analysed in terms of functional quality and performance indicators: adaptability, safety, comfort, dignity, density and autonomy. Each indicators was assessed with the required urban design criteria of inclusive access. In POE, it was decided to use more than one evaluation method. It was thought that systematic observations along with the survey method would increase the reliability of the study. All the details required for the implementation of the methods-a survey and observations with behavioral mapping- are explained within a systematic framework.

Based on the POE results, it could be stated that both physical and social environmental quality does not sustain inclusive access in KTC. Especially; the quality of social environments is worse than the physical environment. In the following chapter; the proposal will be given for establishing and sustaining inclusive access in Kyrenia Town Centre.

Chapter 7

EVALUATION, CONCLUSION AND PROPOSAL

This chapter is a conclusion part of a study and it includes two main sections. In the first section; physical and social environmental system analysis results were evaluated and synthesized by making a review between the existing behaviour system (findings) and expected behaviour setting. In the second section; the conclusion of a study is given together with strategies to redesign the physical and social environment for achieving inclusive access in KTC.

7.1 Evaluation and Synthesis: Physical and Social Environment

Developing outdoor environments responsive to the aspirations and needs of people can be achieved by reviewing outcomes of urban design project. The evaluation process is the last stage of the post-occupancy evaluation model. During this process, the evaluation and synthesis were done by considering between the existing behaviour setting and the expected performance value.

In this study, it was aimed to make POE for appraising the quality and performance of KTC's urban open spaces for people with and without physical disabilities. The POE was also carried out as a tool to determine the level of inclusive access in KTC. While the representative samples allowed for comprehension of usage problems and generalized results, the survey provided to define the quantitative value of inclusive access. All findings obtained from the survey and behavioural observations were evaluated by considering demographic profile, purpose and frequency of town centre

use, accessibility and movement patterns, functional quality and user satisfaction. At the following lines, physical and social environmental analysis results will be evaluated and synthesized together.

When the evaluation was done for **demographic profile**, it was seen that KTC can bring people from all walks of life and all age groups together. It was founded that the respondents in the survey, 50,65% female and 49,35 male, have the same opportunities for women to have a say in social life and to participate in public life. According to correlation results, there are no differences in the opinions of male and female users about physical environmental quality. However; significant differences were founded in respondend's opinions about the social environmental quality. From the **gender** point of view; it can be stated that female users have more expectations from the social environment than male users.

%31.85 of the users participating in the survey were between the **ages** of 19-45, and it was observed that the majority of those visiting the city centre were military groups and university students. Besides; some significant differences in scoring patterns were founded between the different user groups that vary in age. Elderly people and children evaluated the physical environmental quality at a lower level than other generations. During the observations, it was recorded that children were generally riding bikes or pushing scooters and elderly people were mostly walking on the sidewalks by using assistive devices. However; improper design of curp ramps or lack of pedestrian crossings on crosswalks failed both children and elderly people activities in KTC. For the social environmental quality, children are more dissatisfied than other user groups. This may be due to dangerous traffic patterns and vehicle drivers' attitudes.

KTC is used by people with a varied **socio-economic profile.** The number of people with a low-income level is almost equal to the number of people with a middle-income level. Low-income respondents extremely include part-time staff who works in KTC. People with middle income level involved private business owners and government officials in KTC. However; the opinions of respondents related to physical environmental quality is not varied in terms of their economic profile. For the social environmental quality, people with high and low incomes are more dissatisfied than middle-income user groups. Because; people with high and low income level consume and spend less than people with middle-income level, as they spend less time in KTC. Car parking fees and charges of eating/drinking are among the reasons of dissatisfaction of people with middle-income level who are governmental officials.

The research results showed that Kyrenia Town Centre is used by people with varied mobilities. Able-bodied people are more satisfied than the disabled people. While the disabled person evaluated the physical environmental quality as bad, able-bodied people consider the physical environment is moderate in quality. This is the expected reason for the research hypothesis. At the same time, both disabled and non-disabled users are dissatisfied with the social environment quality. Especially, vehicle drivers2 attitudes were founded disturbing. Since the town centre has population diversity, urban open spaces have to be properly designed with the particular and changing needs of all user groups. Inclusive access features have to be considered not only able-bodied person or wheelchair user, involving society at large. The quality of social environment should be also increased with suitable regulations.

The intensity of performed activities depend on the quality of space. When it was asked about the **purpose in use**, users stated that they primarily prefered being in the town centre for working, followed by shopping, eating and socio-cultural activities. Although the town centre has several meeting points and residential facilities, it was rarely used for meetings and accommodation. That means the quality of urban space is not sufficiently good.

The **frequencies of use** were also tested. When, everyday users are employers, the rest of users prefer to use the town centre several times per month for optional activities use the area. The town centre is mostly visited during the weekends and this intensity of use generally consist of military groups. People who prefer to use KTC during the weekends are more dissatisfied than other users. This situation is the effect of density in use that overall capacity of the town centre is not allowed people to move freely within the urban open spaces. Busy town centre decreases the functional performance level, especially Sunday afternoons.

Results also show that daytime use was more intensive than night use, which means the quality of urban spaces in the town centre is not considered good for night usage. **Average time spent** in the area was zero to two hours. People who prefer to stay 0-2 hours are intensively dissatisfied with the physical environment. Such abbreviated usage periods are signs of reduced activity and even comfort in the urban space. The observation results evidences of this situation, because there is not accessible public toilets, users of KTC might need to the break function and leave from the urban space.

According to survey results, it is seen that access to KTC is mainly depend on private car travel. In the KTC, the **public transportation system** is not sufficiently working

and available for vulnerable user groups and so it is extremely prefered by the teenagers. Compared to the private car transportation system, other modes of accessibility seem fragmented and inconvenient, thus KTC is not accessible at all. The absence of bus stops and accessible public transportation vehicles is the most significant obstacles of public transportation services. Poor availability of public transportation services increases traffic congestion and car parking space demand in the KTC; it also decreases the safety and mobility of pedestrian users. Public transportation facilities are not successful as a whole in North Cyprus. People who do not have a private vehicle for transportation are at disadvantage in terms of accessibility and they acquire a transportation-related disability.

The **physical environmental quality** was tested in terms of buildings entrances, pedestrian routes, and open space activities and services. The quality of **building entrances** was evaluated by considering width, gradient, surface material and ramp location. Problematic width arrangement, material selection and level differences of entranceways present problems to a majority of users. Especially; steep entranceways without ramps and narrow thresholds create obstacles for wheelchair and scooter users. The overall usage density is not suitable with the narrow building entrance ways and tresholds. Based on all research findings, it can be said that the design quality of the building entrances is insufficient and they constitute an important obstacle to the realization of the desired function at KTC.

Providing good **pedestrian routes** is critical to attract residents and visitors to the KTC. Pedestrians need a connected network that joins all destinations without interruptions or disconnections. Therefore; pedestrian routes quality were evaluated

for **sidewalks and pathways, curb ramps** and **pedestrian crossings**. The quality of sidewalk width, gradient and surface material is bad for both disabled and able-bodied pedestrians. The narrow sidewalks restrict pedestrian users' mobility and especially overcrowded sidewalks were the main obstacle and sometimes obliged the pedestrians to walk in a vehicle zone. Thus it can be emphasized that unsuitable sidewalk width with a usage density produces problems related to safety, adaptability, autonomy and dignity. Unsuitable material selection, unexpected level changes and obstacles such as manholes, street furnishing elements also creates problems for the sidewalks' use in KTC. Inadequate design of sidewalks and pavements constitute an obstacle to the formation of expected behaviour setting.

Curb ramps are not properly designed for public use and they are not compliant with the needs of either disabled and non-disabled users. Width arrangement, gradient design and surface material selection are not compliances of inclusive access standards. As curb ramps, the quality of **pedestrian crossings** was not provided inclusive access requirements. Because; they were unsuitably dimensioned and covered. Particularly; the refuges in pedestrian crossings have not sufficient space for people with wheeled devices to manoeuvre, there is a need for further treatments to offer inclusive access in KTC. Dimensions and surface material quality of pedestrian crossings have to be upgraded.

The quality of **open space facilities and services** is not sufficient for establishing and sustaining inclusive access in the town centre. The provision of **car parking facilities** has not reflected usage density and the findings related to car parking facilities

highlight how unsuitable design application pose problems for a vast majority of users. Accessibility to the town centre is difficult.

KTC users are not satisfied with the location and dimensions of **street furnishing elements** and the furnishing do not offer convenient and flexible use and they cause safety problems. Mainly, **resting facilities** and **ATMs** are problematic for physically disabled users. Benches without backrests are not comfortable and safe for elderly people and pregnant women. ATMs are troublesome for wheelchair users and very short persons. Therefore; more useful and accessible street furnishing elements are urgently needed in the KTC.

Public toilets take the lowest satisfaction degree in the performance evaluation, so well-designed toilet facilities still absent in the town centre. KTC has not provided seamless accessibility for physically disabled users. Physically disabled people may wish to attend town centre facilities but may feel prevented by the lack of publicly accessible toilets.

Signages were evaluated with the highest performance level, especially users inferred that the legibility of signage was in a good condition. Because; signs that were placed in the KTC predominantly designed based on the inclusive use standards. Lack of lighting only for signages create problematic night usage in KTC.

In general **social environmental quality** was found worse than physical environment quality according to KTC users. This shows that regulations related to **socio-politic, socio-cultural** and **socio-economic features** are not sufficient for maintaining inclusive access in the KTC. The absence of routine maintenance and day-to-day

management activities negatively influences the provision of usability and accessibility in the town centre. Poor maintenance facilities particularly precipitate problems related to usage for people with physical disabilities. Since the POE results disclose the existence of poorly-maintained facilities, the local authority has to take more responsibilities for procuring and maintaining higher quality in the KTC.

Negative attitudes of society are among the reasons that produce environmental pressure and exclusion in urban space. People with and without physical disabilities were inconvenienced and offended by the actions of business owners and vehicle drivers who obstacled pedestrian routes. Solutions are urgently needed to create a more influential and stronger legislative arrangement for inclusive access in the KTC.

In KTC, the ability to lead a full urban life is restricted by the inability of the urban environment to accommodate changing needs in terms of the socio-economic profiles of users. In a survey, the number of the local respondents are much more than the number of the tourist respondents. Since tourist-oriented fees are relatively expensive for local users, the performance level of socio-economic elements was evaluated to a lower degree. Besides; if disabled users carried special identity cards or health board reports, they would not pay for the parking facilities but acquiring those documents is not possible for all users and those documents do not supplement fees for other services. Similarly, the inefficiency of public transportation facilities necessitates personal vehicle or taxi usage to access KTC. Both car ownership and taxi fees are too expensive for many users – particularly for unemployed disabled users. In the KTC, affordable facilities are rare, so taking precautions to control economic barriers to KTC's inclusive use is vital.

Accordingly; the POE results ascertained weak situation of both physical and social environmental features that do not conform with the required design considerations and issues of inclusive access. POE helps to understand resons of exclusion and the local authority is expected to benefit from this measurement, while the KTC upgrade scheme is ongoing process. The POE outcomes will not only beneficial for Kyrenia Municipality, both method and proposal which are suggested in this thesis, could be used for the evaluation of other similar urban contexts. In the following part of the chapter, a conclusion is given with a proposal.

7.2 Proposal: Strategies to Redesign of Physical and Social Environment for Achieving Inclusive Access in Kyrenia Town Centre

Insensitively designed and disabling environments cause added difficulty and problems for people with and without physical disabilities. Adjustment of accessibility design standards and codes alone may not be an influential solution for creating inclusive access in urban centre. Ensuring inclusive access is dependent on the think inclusively that necessitates a method considering how design and management of the built environment could affect a person's ability on its use.

Using POE as a method aids the built environment professions to understand users' needs and aspirations. The POE method also assists to clarify the quality of current design attempt and determine the real situation of what urban space performs for its users. In order for establishing and sustaining inclusive access in urban centres, POE must be seen as a necessary component of urban design projects. Municipalities can use POE as a tool to diagnose the source of problems on inclusive access to measure the degree of adaptability, safety, comfort, dignity, legibility and autonomy which are

significant design attributes that ensures functional access and user satisfaction at urban centres.

Using POE permits both local and governmental authorities to develop a new scheme to upgrade the quality and usability of the urban spaces especially for disabled pedestrians. POE can also help the authorities to develop new strategies for establishing and sustaining inclusive access in urban centres. Accordingly, in order to achieve inclusive access in Kyrenia Town Centre, possible design strategies have to develop by all authorities related to urban design and such strategies were given in the following part.

7.2.1 Strategies in General (City Scale)

Strategies which are related to city scale developments have been separately given below.

a-Comprehensive Planning Approach

Pedestrian access has to be prioritized under the framework of comprehensive planning approaches. Comprehensive master plans have to be prepared under the themes of both **Transportation and Pedestrian Master Plan**. Kyrenia City's transportation master plan is actually ready, but it must be revisioned by considering pedestrian-oriented details. Institutionalized standards, policies and design guidelines must be envisioned for the provision of inclusive access in urban space. People with and without disabilities have to be actively involved in the whole process of master plans development. Governmental authorities should be sensitive to the implementation of these master plans.

Transportation authorities should address accessibility in all components of a pedestrian master plan. The goal of the pedestrian master plan must be encouraged for walking as a main mode of transportation and mobility, besides travel needs of all people have to be intended into this plan. Integrating accessibility into the pedestrian master plan is required by law, also the cost-effective and time-consuming modifications shoul be considered.

b-Supporting Resources and Funding

In order to achieve fully implemented urban design projects and land-use decisions, it is required to support sufficient resources and funding. The funding category can be used for building, altering or improving accessible pedestrian environment. Urban design projects can be also funded by governmental aids including the accessibility projects of transportation, tourism and environmental planning offices.

c-Economic Development

Governmental and local authorities have to provide opportunities for disabled people to participate in the economy of the city, along with access to a variety of quality jobs. Therefore, land-use decisions must encourage locally owned, serving businesses and focus on catalyst projects which generate investment and further economic development. In these new investment projects, job opportunities should be created for vulnerable groups of society.

d- Education of Professionals

The knowledge of built environment professionals has to be improved with training programs on inclusive or universal design approaches. Universities have to take role and they have to add inclusive or universal design courses to each design curriculum

of appropriate departments (i.e. architecture, landscape design, urban design and industrial product design).

e-Performing for Access Audit System

Access audit system should be adopted to review design projects to determine compliance with inclusive access legislations, codes and standards and this system has to take accessibility standards for people with a range of disabilities. Effective access audit also depends on the consideration of day to day operations regarding social environmental features as management and maintenance services.

The design process has to be evaluated and reenvisioned with performance benchmarks for inclusive access. Suitable post-occupancy evaluation strategies have to be developed and carried out for questioning design solutions in terms of inclusive or universal design perspective. An effective resolution, which conformed with post-occupancy evaluation, should be applied to future works.

7.2.2 Strategies to Re-design of Urban Open Spaces in Kyrenia Town Centre (Space Scale)

Important strategies will be given for development for upgrading both physical and social environmental quality in Kyrenia Town Centre.

a- Upgrading Physical Environmental Quality

- **Building entrances and environs**

Building frontages and entranceways should be designed with inclusive design considerations including;

-the width of entraceways should be enlarged.

-surface covering material of entranceways must be non-slippery and mate.

-accessible ramps should be provided rear to the main entrance.

-obstacle-free entrance ways are available, therefore shop owner must remove newspaper holders and gift stands which are placed near to main entrances.

-ramps must be installed for the level changes and they should be sided by handrails with gripping surfaces

-one-sided hinge doors should be provided

-canopies may be considered above the entranceways against weather conditions.

- **Pedestrian routes**

Pedestrian-oriented details have to be defined in urban design projects. Installing accessible sidewalks and pathways in urban space is critical to provide functionality. The quality of the pedestrian experience has to be defined during the project planning process. Designers and planners must be considered more about pedestrian details including:

- Buffer zones that separate pedestrians from motorist must be considered for pedestrian safety. This can be accomplished by providing wide sidewalks or sidewalk setbacks, such as planting strips.
- All shopping stalls, chairs and tables which were placed on the pedestrian zone, should be removed.
- Street trees and landscaping elements must be regularly placed within the boundaries of planting strips.
- Strong, stable and non-slippery materials have to be used for pedestrian routes' covering.

- All pedestrian routes must be placed at the same level or curb ramps have to be installed for the level changes.
- Curb ramps and pedestrian crossings must be intended to design with enough space for manouevring of people with wheeled devices as wheelchairs and strollers.
- Gratings and openings on sidewalks should be placed outside from the pedestrian zone.

- **Open space facilities and services**

Open space facilities and services should be upgraded such as:

- The number of street furnishing elements, lighting element and garbage bins must be increased and they have to be suitably designed in terms of ergonomic measures.
- The number of car parking must be increased with suitable design solutions or accessible transportation facilities should be provided to decrease car parking demand.
- Curb ramps have to be provided at the drop-off zone parking places
- Public toilets must be located at the ground level and they must be completely redesigned to include inclusive access requirements.
- Bus stops have to be installed with the regular intervals
- Resting facilities must be placed at the regular intervals
- More usable and accessible ATMs should be installed.
- Pedestrian-oriented signs and traffic control devices have to be installed.
- Signages should be illuminated for night usage and they must be placed according to inclusive use standards.

b-Upgrading Social Environmental Quality

The social environmental quality should be upgraded for the provison of inclusive access in KTC. The following recommendations are necessary for the enhancement of the functional performance of urban spaces of KTC.

- **Socio-politic, Socio-cultural and Socio-economic features**

Socio-politic, socio-cultural and socio-economic features should be enhanced as follows:

-Local authority should designate access an officer as a coordinator of inclusive access strategies. The officer has take a role in the development of inclusive design policy and inclusive design guidelines.

-Regular public meeting programs have to be arranged and representatives from all responsible authorities must attend those meetings.

-Training programmes have to be prepared for the education of municipality staff, including all members who interest in urban space design and management facilities, architects, urban designers, planners, technique staff have to attend those training programmes.

-Local authority have to take more responsibility for procuring and maintaining higher quality in the KTC's urban design. Maintenance strategies should be included in the preliminary planning stages of urban design projects. Maintenance plans should also address existing facilities. The extent and frequency of maintenance schedules must vary greatly depending on the location, amount of use, and resources available. Continuous maintenance programs can be implemented by subsidizing building owners, this is another alternative for the regular maintenance facilities.

-Day-to-day management facilities should be regularly provided, local authorities have to intentionally secure and control urban space facilities. Traffic and parking control have to be regularly provided. Strong laws have to be enacted and enforced. The private sector has to be routinely controlled and required laws should be enforced.

-Inconvenience actions of business owners and vehicle drivers can be taken to control by providing more influential and strong legislations about the usage of KTC.

-Precautions should be taken to control economic barriers. charges for public transportation, car parking and public toilet services must be reduced. Prices of selling products and eating/drinking can be taken control by the authorities.

Since the existing upgrade scheme was partially completed and rest is ongoing in a process, learning mistakes from POE will contribute to improve design databases and standards on inclusive access policies of the local authority. Strategies that can be developed based on the POE outcomes will also provide the Kyrenia Municipality to save budget, time and workforce against possible budget expansions through repetition of management errors, technical application and planning mistakes.

7.3 Conclusion

Developing outdoor urban environments that are responsive to the aspirations and needs of all users, can be achieved by reviewing outcomes of existing urban design projects. The implementation of post-occupancy evaluations leads to comprehension of essential user demands and creates opportunities to enhance environmental quality and performance of urban spaces. Inclusive access needs of urban space users can be addressed by a critical perspective on what has been termed a ‘user-friendly’ town centre. Adaptability, safety, comfort, dignity, density, legibility and autonomy are key qualities that increase functional performance as well as inclusive access in town

centres. In order for establishing and sustaining inclusive access in urban centre, POE must be seen as a necessary component of urban design projects. POE can be used as a tool to diagnose the source of problems about inclusive access.

The Kyrenia Municipality reacted and developed a new scheme to the upgrade quality and usability of the movement areas of KTC especially for disabled pedestrians. However; the upgrade scheme was partially rehabilitated and the rest of urban design project is an ongoing process. Using POE will permit Kyrenia Municipality to increase functional performance of KTC through the elimination of incorrect design decisions which produce exclusion and social isolation.

The process of user involvement is central to successful inclusive design and POE have to become an accepted part of the design by making objective evaluations based on obviously stated performance benchmarks. In this study; using survey and observations with behavioural mapping data together have made the evaluation more valid and reliable. Representative samples were carried out to obtain data necessary for behavioural mapping and they allowed for comprehension of usage problems and generalized results. Even with the existence of upgrade scheme and project implementation, the case study's evidence discloses traces of exclusion produced by environmental barriers. Both the physical environment and the social environment have design features that are far from the inclusive access needs whereas all the desirable qualities remain desirable by society at large. POE results can serve as providing feedback to re-design of urban centre which is more inclusive for the people with and without physical disabilities. POE have to be a compulsory part of the design process and its implementation will enable Kyrenia Municipality to achieve its targets.

7.4 Agenda for Future

Post-occupancy Evaluation will reveal useful shortcomings and oversights in the proposed upgrade scheme through user perspectives. Its utilisation will create opportunities to enhance user satisfaction and environmental quality. Kyrenia Municipality is expected to benefit from the findings of this research, while the KTC upgrade scheme is ongoing process. In addition to this; POE should be also implemented to other projects of the municipality within regular intervals to test the impact on all users of newly designed and renovated environments. The present research is not only beneficial to Kyrenia Municipality but also similar locations as well. As in the case of KTC, making systematic and diagnostic reviews enable the other relevant authorities to create more livable and equitable urban realms.

In order to provide long-term success, the design appraisal and quality assurance efforts have never been terminated. They have to be repeated to obtain beneficial inputs on urban design guidelines. Finally, the POE method used in this study may be applied to analyze other similar settlements and further studies would help to develop a more comprehensive method of diagnosing the level of inclusion for other disability groups who have been omitted from the study.

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APPENDICIES

Appendix A: Inclusive Design Standards for Physically Disabled People

Building Entrances and Environs:

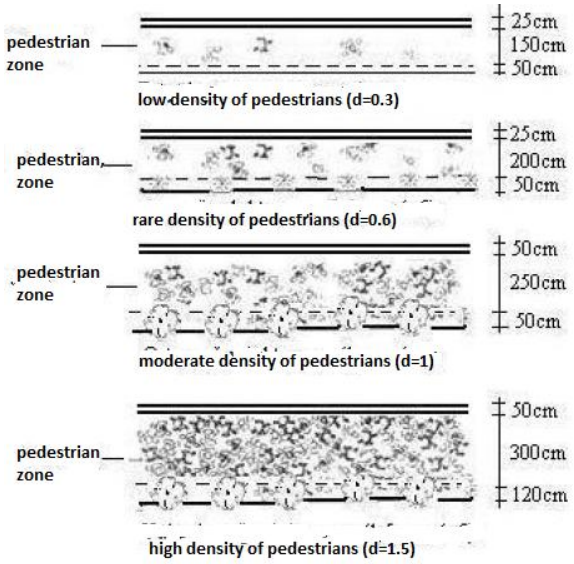
The minimum width of the pedestrian way must be 300 cm (TSE,1991). Entrance doors should have at least 90 cm width. It must be avoided from designing tresholds. The height of tresholds is limited to 1/2'' for new construction. The edge have to beveled at most 1:2. A maximum height of 3/4 is permited for both existing or altered thresholds even they have beveled edge on each side with a slope that not above 1:2 (ADA, 2010).

Pedestrian Routes:

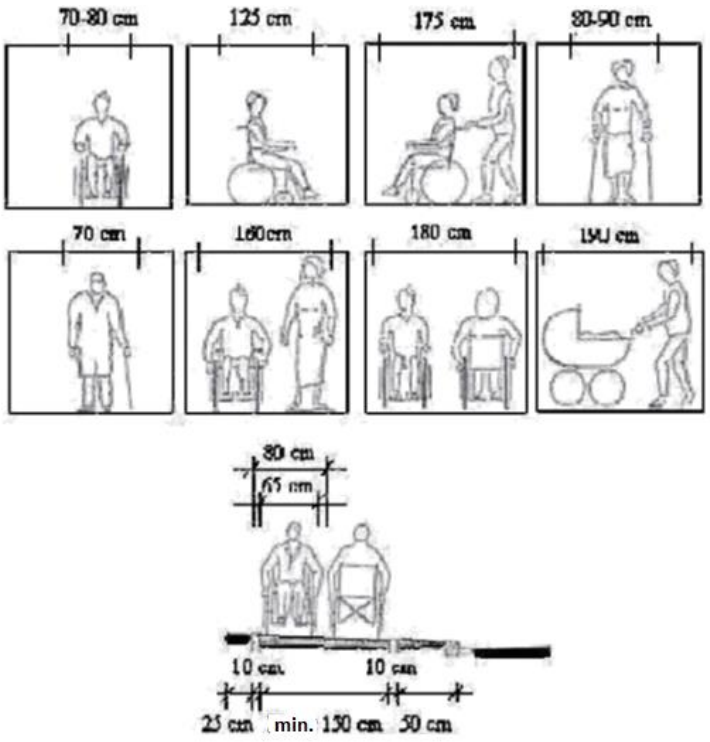
-Sidewalks' Width:

Inclusive sidewalks should have minimum 150 cm, but 200 cm is an ideal distance for comfortable use. The width of a sidewalks have to be also determined depend on the classification and type of existing road and density of usage. The suitable width of a sidewalk includes following dimensions:

- If the street's pedestrian density is d=0,3 pedestrian/m^2 and pedestrians would not require to pass each of them; 150cm is an ideal for a sidewalk width.
- If the street's pedestrian density is d=0,6 pedestrian/m^2 with normal steps for walking, a sidewalk width should be at least 200cm.
- If the street's pedestrian density is d=1 pedestrian/m^2 with high pedestrian volume and intersections, the sidewalks would have 250 cm width.
- If the street's pedestrian density is d=1,5 pedestrian/m^2 with increasing land-use through schools, theatre, cinema, art center, i.e. and high pedestrian volume and intersections, the sidewalk widht should be 300 cm (TSE,1997).



The relationship between the sidewalk width and density in use.



The minimum sidewalk width for people who have mobility limitations (Sürmen,1995)

Sidewalk's Gradient:

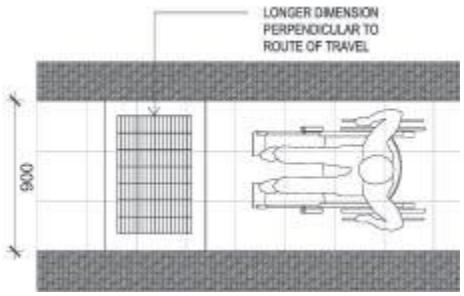
The existing slope should not exceed 5%. If the sidewalk's grade exceeds 5 percent, the level landings should be provided at regular intervals (Solidere,1994).

Changes in level

Changes in level that exceed 6mm can reduce the accessibility of sidewalk for wheelchair confined person. According to ADA, small changes in level up 6mm can remain as vertical without any edge treatment. A bevealed surface with a maximum slope of 50 percent necessitates small changes in level between 6 mm and 13 mm and changes in level as curbs which exceed 13mm should be removed or ramped.

Gratings and Openings

Longer dimensions of gratings should be placed perpendicular to route of travel



The ideal form and placement of grids on sidewalks

Curb Ramps:

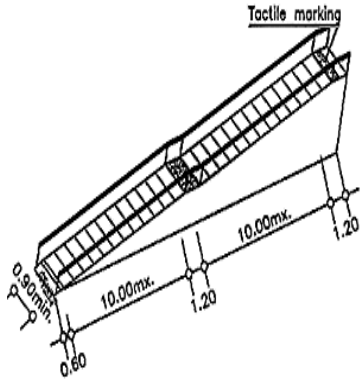
Curb ramps are used wherever there is a difference in level on pedestrian paths or cross paths and they should be located away from places where water accumulates.

Curb Ramps for Narrow Pavements
If the construction of curb ramps would affect the width of the travel route, the whole pavement should be lowered with a maximum slope of 1:12.
Curb Ramps' Width
The minimum width of a curb ramp should be 0.90 m, excluding the sloping sides. The recommended width is 1.20 m (UN,2004)
Curb Ramps' Slope
The maximum slope of a curb ramp should be 1:12.
The maximum slope of flares should be 1:12 (UN,2004)
Existing Construction
The maximum allowable slope for a curb ramp constructed along high pavements should not be more than 1:10. The maximum slope of the flares should also be 1:10.
If existing curb ramps do not comply with the above mentioned requirements, they should be modified.

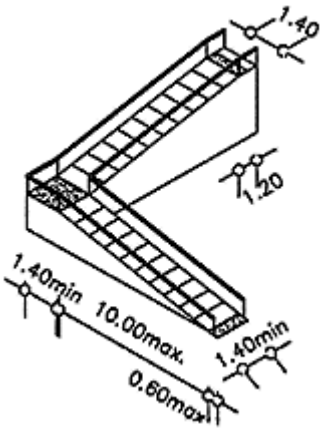
Ramps:

The maximum slope of ramps in urban space is suggested as 1/8 (12%), but the lenght of the ramps should not exceed 600 cm, the recommended landing height is 200 cm (Verhe, 1995). Ramps can be organized in different form in order to their configuration:

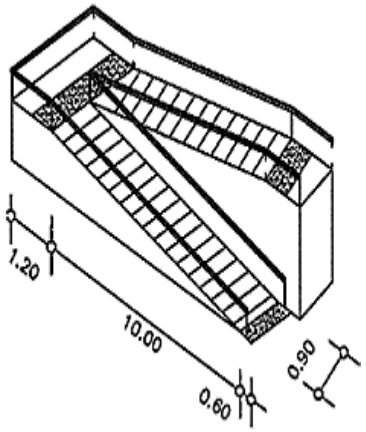
- Straight ramp
- 90 turn ramp
- Switcth back and 180 turn ramp



Straight run ramp

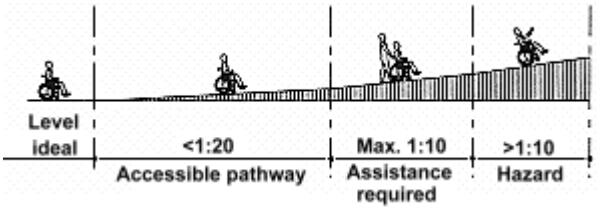


90 turn ramp



Switch back or 180 turn ramp

Differences in level represent special challenges for physically disabled people. The access to different levels is possible with ramps. If the ramp slope is more than 1/10, the facilities on the ramp may be unreasonable for physically disabled users. They may encounter with risks on possible hazards. Physically disabled users prefer to use ramps without required to any assistance, therefore the ramps should have an ideal form. UN, ADA and UTCTEA recommended that the usable ramp should have maximum 1:20 slope and steeper slope might be available in special cases depending on the lenght.



Accessibility situation of different ramp slopes

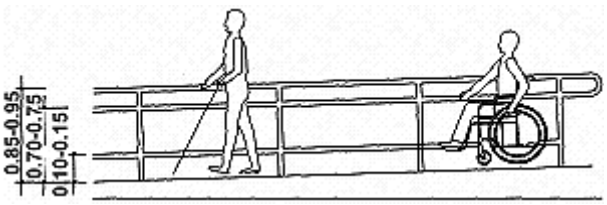
Maximum slope	Maximum lenght	Maximum Rise
1:20 i.e., 5%	-	-
1:16 i.e., 6%	8 m	0.50 m
1:14 i.e., 7%	5 m	0.35 m
1:12 i.e., 8%	2 m	0.15 m
1:10 i.e., 10%	1.25 m	0.12 m
1:08 i.e., 12%	0.5 m	0.06 m

Ramps landings

UN (2004) gives standards on landings with minimum lenght 1.20 m. If ramps change direction at landings, the landing size should be at least 1.5mx1.5m (UN, 2004).

If a ramp run has a rise more than 150mm or a horizontal projection more than 1800mm, handrails should be placed to both sides of the ramp. Handrails are not required on curb ramps or adjacent to seating in assembly areas. UN (2004) highligted on the general design considerations on the handrails:

- Handrails should be provided at the both sides of a ramp segment.
- If they are uncontinuous, they should be extended at least 300 mm beyond the top and the bottom of the ramp segment and should be parallel with the ground surface.
- Gripping surfaces should be continuous. The top of handrail gripping surfaces must be mounted between 800 mm and 900 mm above the ramp surfaces.



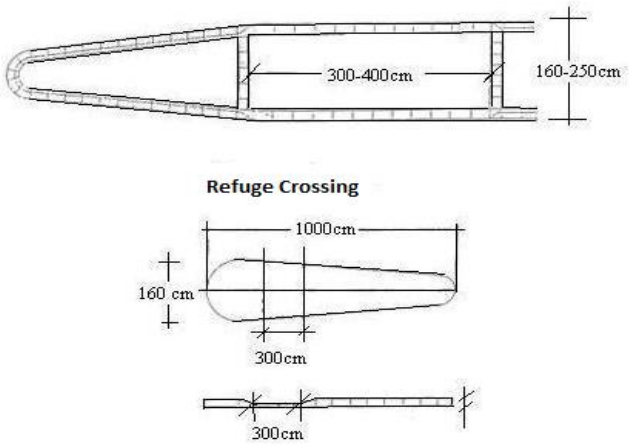
Standards for handrails on ramps which are given by UN (2004)

Handrail form

Handrails must be located between 0.85 m and 0.95m above the finished floor level. If second handrails are installed between 0.70 m and 0.75 m from the floor, they can be beneficial for wheelchair confined person. Third handrail should be mounted at a height of 0.60 m to facilitate a short people utilitisation. They should have continuity on both sides without any break, interruption and obstructions. Handrails should be extended horizontally for a distance betwen 0.30 m and 0.45 m at the top and the bottom of ramps, except for places in which extensions may be obstruct the pedestrian flow. If the ramp is greater than 3.00 m width; the intermediate handrail should be installed (UN,2004).

Pedestrian Crossings:

If the road width permits refuge placement at the middle, the pedestrian island should be planned and these road has even buttoned traffic light, it should be installed once in those island. A design of effective pedestrian crossings require the correct arrangement of a numerous components of pedestrian crossing including; information/ signs, signals and markings; turning radius, crosswalks, crossing times, medians, refuge islands and slip lanes and traffic patterns.



Pedestrian crossing with refuge and traffic island (TSE, 1990)

- Open Space Facilities and Services:

Car/Curb Parking:

Car/curb parking design is related to congestion level, roadway type and land-use. Uniform Vehicle Code (UVC) and Model Traffic Ordinance are the first documents on restrictions for curb parking and they suggested that person should be avoid of parking, stand or stop on sidewalks; within an intersection or on a crosswalk. Standing or parking vehicle can available within 20ft of a crosswalk at an intersection or 30ft upon the approach to any flashing signals, stop sign, yield sign or traffic control signal placed at the side of a roadway.

-The number of parking facilities

ADA gives a detailed measures on an ideal percentages of disabled designated parking facilities and the minimum number of required parking spaces has been shown in a table:

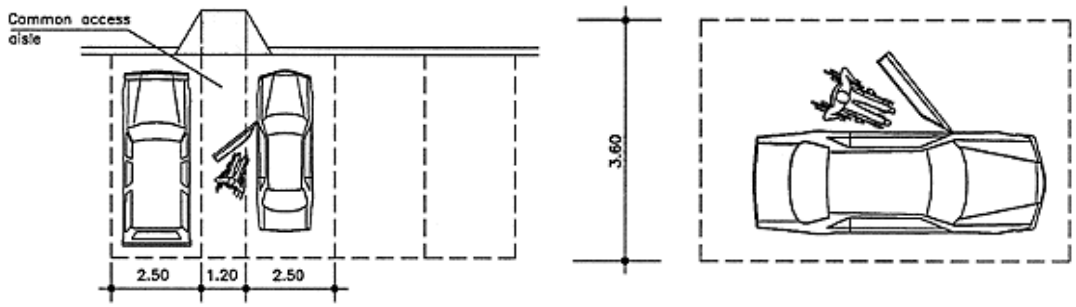
Total number of parking spaces in parking facility (Lot or garage)	Minimum number of accessible parking spaces required
1-25	1
26-50	2
51-75	3
76-100	4
101-150	5
151-200	6
201-300	7
301-400	8
401-500	9
501-1000	2% of total
1001 and over	20, plus 1 for each 100, or fraction thereof, over 1000

Location of Parking facilities

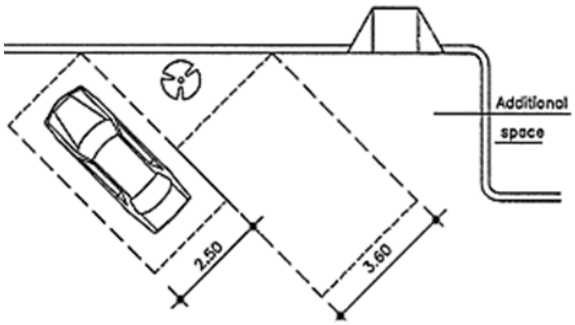
Accessible parking spaces at urban spaces should be located with maximum 50m distances from accessible building entrances or should be placed as close as destination point. If the designated entrances or space is far away from the 50m, the construction of drop-off parking facility is recommended.

Dimensions of Parking spaces

The minimum width of an accessible parking space is 3.60 m, but recommended width includes 3.90 m for comfortable use. An access aisle should be designed and located between the two ordinary parking spaces with 1.20m width. If parking spaces are arranged in an angle form, access aisle could be considered with the extra space at the end of parking row.

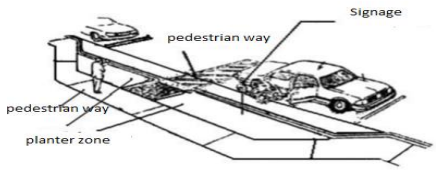


The recommended dimensions of accessible parking facility

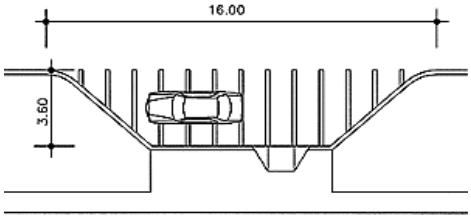


Designated disabled parking facility with an access aishle at the end of parking row.

The suitable diemesions of drop-off areas include 3.60 m wide with 1,20 m access aisle and its lenght should cover at least two cars.



The components of curb parking



Suitable dimensions of usable curb side parking and drop-off zones

Bus/transit stops:

Since motor buses are one of the largest manouevring vehicle on the street, the standard dimensions of the buses determined at most 65 feet long and 8-½ ft wide. Each transit system has standard sizes and location for their ideal bus stops. The bust stop shold 100 to 150 feet long.

Location of bus stops

The bus stops should be located along the accessible routes. It is required at least 90cm width at the boarding and lighting point of the bus stand to the sidewalk or acessible entrance of the building. If there is a differences in level between the drop-off area and the sidewalks, a curb ramp should be provided.

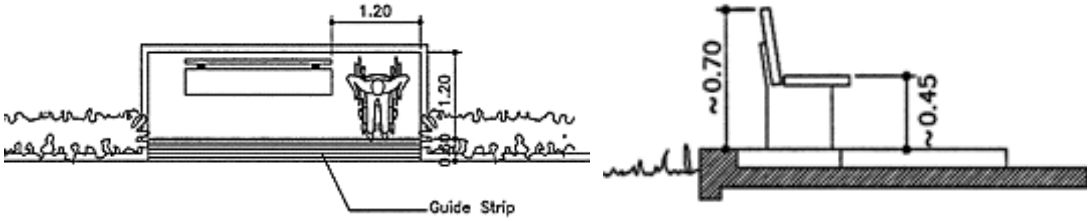
Layout of Bus Stops

The bus stops must have bench, wheelchair space and shelters. The shelters should be placed at the bus stand for protecting users from the undesired weather conditions. The ground surface under the shelter must be firm and even. It is necessary to provide adjoinning space next to the seating element for wheelchair user

Resting Facilities:

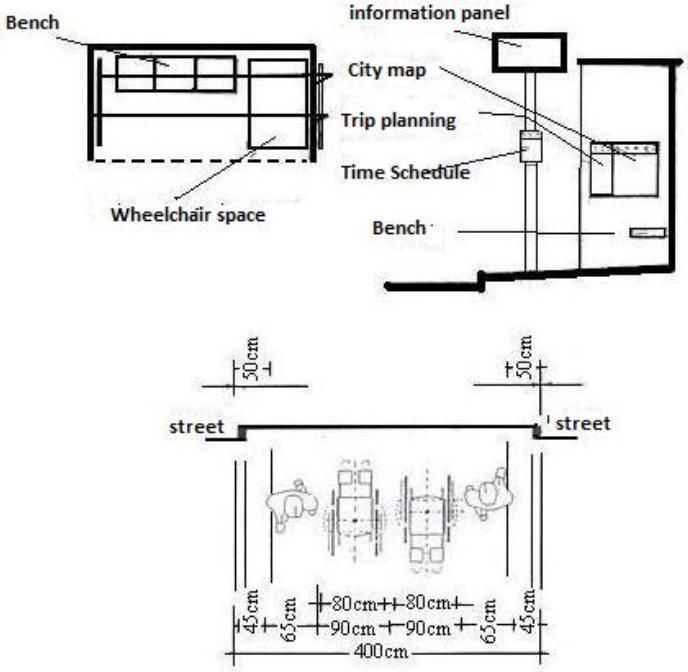
According to UN (2005) the resting facilities requires intervals that may change between 100 m and 200 m. It is also necessary to reserve free space near the bench for wheelchair users. The reserved adjoinning space should have 1.20 m distance. It is entailed to consider seating accomodation near to public telephone booths, public

toilets, etc. the height of seating should be approximately 0.45 m above floor level and with brackets 0.70 m above floor level.

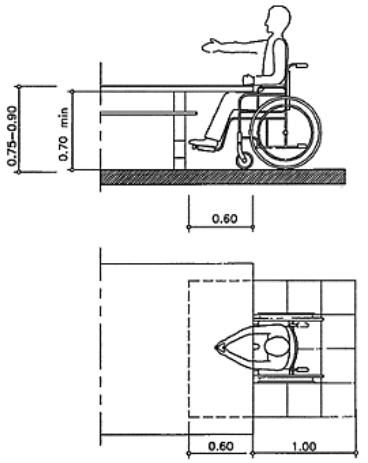


Dimensions of resting facilities for wheelchair users

If there is a table in front of the seating, the table height should be between 0.75 m and 0.90 m and the minimum depth under the table have to be 0.60 m that allows approach of wheelchair user.



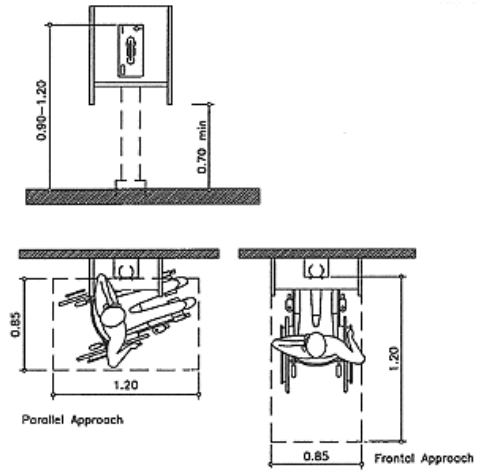
A sample of ideal bus stop and design components



Anthropometric measures of frontal approach

Telephone Booths:

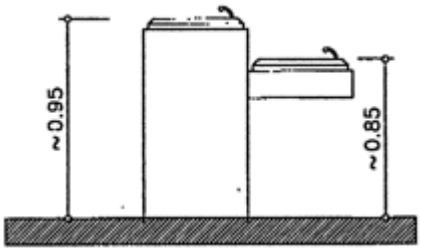
UN gives standards of telephone booths that is required unobstructed in front of the telephone counter at least 1.20 m x 0.85 m area at least which accepting both of parallel and frontal approach. The coin slot should have appropriate height between 0.90 m and 1.20 m for providing the comfortable use. The telephone cord lenght must be at least 0.75 m.



An ideal dimensions of telephone booths for physically disabled people.

Fountains:

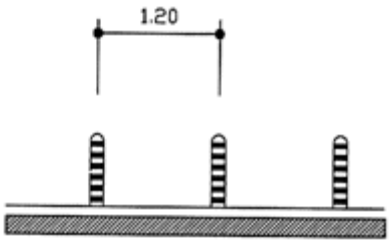
Fountains should have two spout placed at different height. The first is located for wheelchair confined people, short people and children with 0.85 m. The second one with 0.95 m height, is considered for other users. Control mechanism should be push or lever type (UN,2004).



Dimensions of accessible water fountains.

Automated Teller Machines (ATMs):
The slot of the mailbox should be situated at a height between 90 and 120 cm from the ground level. The reachable height should be arranged by considering both wheelchair users and other pedestrian at stand. The maximum height should not pass 120 cm.

Bollards:
Bollards should be carefully placed in urban space.The ideal distance between the bollards is 1.20 m for disabled pedestrians (UN,2004).



Recommended distance between the bollards

Public Toilets:

Public toilets must be located on the ground with suitable, comfortable and graspable entrances. The clear entrance way and door width is required to provide enter for not only wheelchair confined person, person with a pushchair. An suitable door widths must be arranged, particularly by considering people with wheeled devices. The doorway must have clear openning. The entrance should not have raised thresholds.

- The minimum two restrooms should be planned with accessible toilet compartments for the use of both male and female disabled users.
- Accessible lavatory facilities are significant features to provide hygienic facilities to disabled users. At least one area should supply requirements on accessible lavatories.
- Water supply, drain pipes and exposed surfaces must be insulated. It should be avoiding from the placement of sharp or abrahasive surfaces. ADA recommends the removel protected panel under the washbasin against the any possible contact. ın order to provide inclusive lavatory facilites, mirrors, soap dispenser, paper towel dispensers, waste receptacles and warm-air hand dryers should be suitably placed in the area that is accessible to wheelchair confined or short people. the convenient height of hand dryer is at least 1015 mm above the finish floor.
- Accessible emergency alarm have to be placed for the safety of user. The height of emergency button must be considered for the uses of wheelchair confined and short people.
- Diaper changing facilities with accessible changing tables that suits to use of all people and being long enough for a caretaker to change an older child or adult with a disability. Baby changing table or diaper changing table should be installed in either in men's and women's restrooms and also single-family restrooms. The installation of those diaper changing compartmets needs careful consideration, the needs of wheelchair users have to be included as well.

Appendix B: List of Inclusive Access Indicator

Type of source	INDICATORS ON INCLUSIVE ACCESS FOR DISABLED PEOPLE					
Indicators by Leading Initiatives	UN's Accessibility Dimensions for Disabled People	CABE Inclusive Design Principles	TSI (1997)			
	Orientation Independence Mobility Occupation of Time Social Integration Economic Self-sufficiency Transition	Responsive Flexible Convenient Accomodating Welcoming Realistic Understandable	Density Autonomy Safety Comfort			
Indicators by Leading Experts/Academics	Ferguson (1997) Environmental design indicators for disabled people	Burton and Mitchell (2006) Indicators on dementia-friendly urban space	Türel & others (2007) Elderly people's requirements in urban open space	Azemati et al. Accessibility in Traditional Neighbourhoods	Veitch et. al Children in Local Neighbourhoods	Blackman et al. (2013) Dementia-friendly environments
	Environmental Adaptation Mastery Choice Safety Comfort Convenience Accessibility Control and Independence	Familiarity Legibility Distinctiveness Accessibility Comfort Safety	Accessibility Mobility Ease of movement Safety and Security	Continuity Safety Comfort	Accessibility Mobility Independence	Self-control Safety And Security Familiar Welcoming Comfort Accessibility
Indicators by Disabled People Experiences	Goldsmith (1997)	Bromley et al. (2006) Experiences of Wheelchair Users in City Center				
	Dignity Safety Autonomy Orientation	Ease of movement (crowded pavement major challenge for the city centre accessibility)				

Appendix C: A Sample of Administrative Interviews

INTERVIEW SURVEY FORM

General Information on Consultant

The duty of person in authority:.....

The profession of the person:.....

Name of the Unit/Department:.....

*****If the survey is applied Disability Unit, Name of the Unit:.....

*****The professions of Access Officer:.....

Questions on Disability and Inclusive Access

1-What do you think about physically disabled people?

.....

2-What are the needs of physically disabled people in the urban space?

.....

3-What is the inclusive access?

.....

4-How is the functionality of urban open spaces could be increased for the use of physically disabled people?

.....

5-Which kind of laws and regulations could ensure inclusive access/functionality of urban open space for physically disabled people?

.....

6-Which standards do you have knowledge that ensures inclusive access for physically disabled person?

.....

*7-Are there any completed project, planning or implementation on rehabilitation of Kyrenia Town Centre toward disability inclusion?

□Yes (go to question 8) □ No (go to question 9)

8- What kind of works have done? In which grade has the project remained (thought/project/applied)?

.....

9-In your opinion, what is the reason of the absence of those project proposals?

.....

10-In development plans, are there any work on disability inclusion related to urban design & landscape design? (Particularly for Kyrenia Town Centre) (like provision of sidewalks, pedestrian crossings, street furnitures and other services as public transportation and public toilet facilities toward disability inclusion)

.....

11-Are there any seperate finacial supports/budget on provision Kyrenia Town Centre for disabled

people?.....

12-According to your opinions, what are the reasons of not being considered/sufficiently considered physically disabled people needs ?

□ This kind of measures are unnecessary

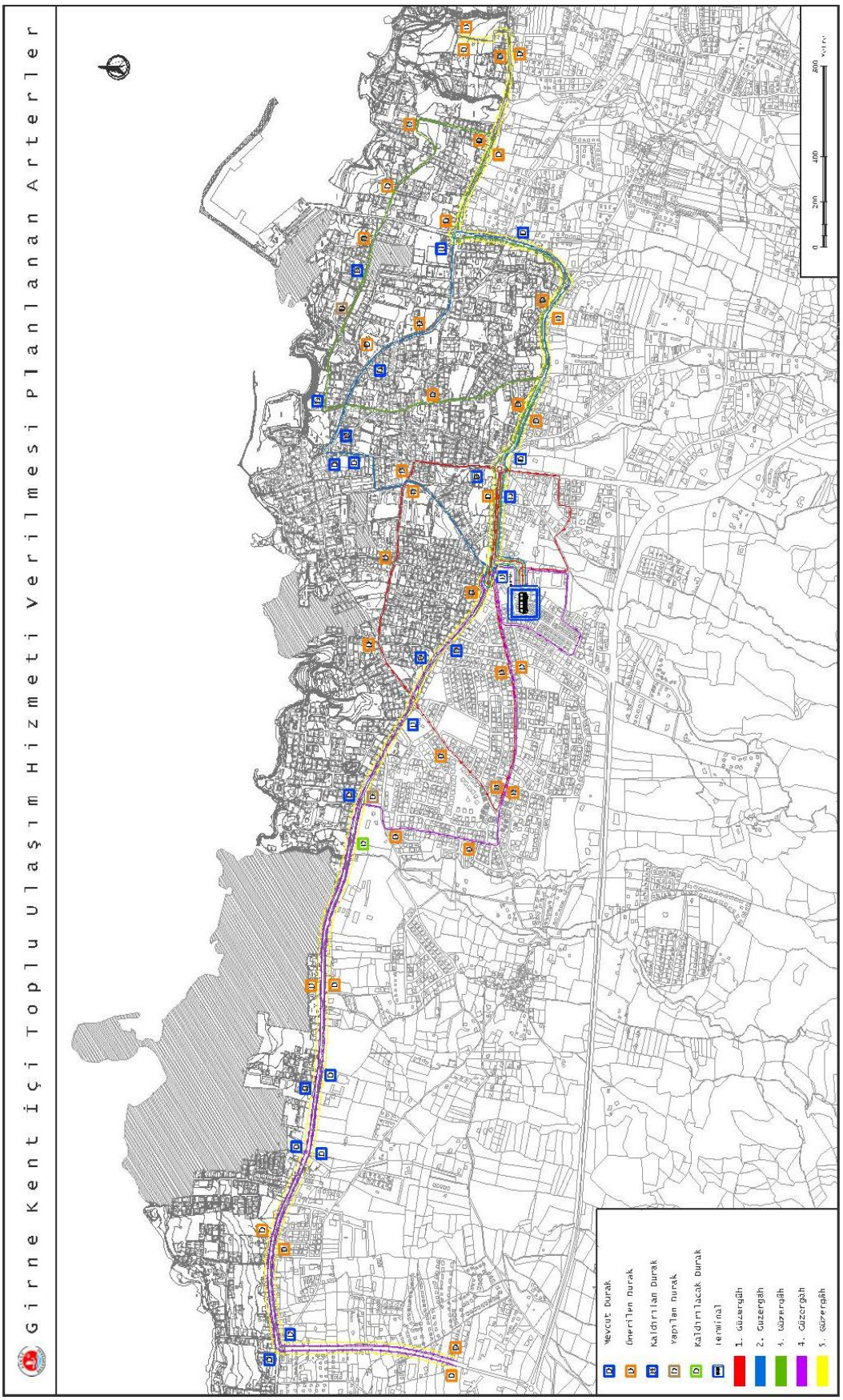
□Absence of techical personel knowledge who works on planning

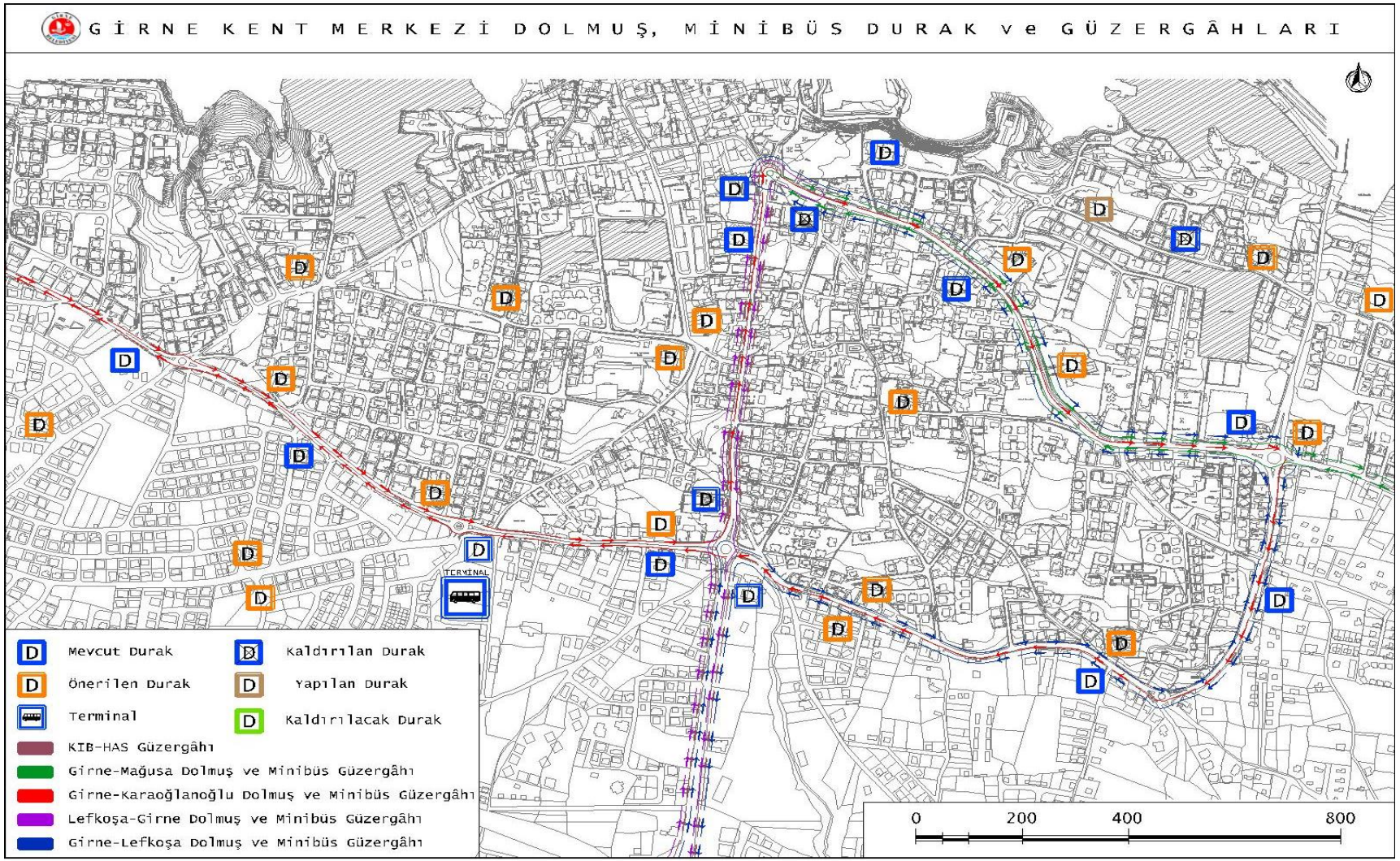
□Absence of techical personel knowledge who works on application

□Absence of required arrangements in large scale plans, creates difficulties to application in small scale plans

□Others

Appendix D: Transportation Master Plan of Kyrenia City




GİRNE KENT MERKEZİ DOLMUŞ, MİNİBÜS DURAK ve GÜZERGÂHLARI
TERMİNAL
Mevcut Durak
Kaldırılan Durak
Önerilen Durak
Yapılan Durak
Terminal
Kaldırılacak Durak
KIB-HAS Güzergâhı
Girne-Mağusa Dolmuş ve Minibüs Güzergâhı
Girne-Karaoğlanoğlu Dolmuş ve Minibüs Güzergâhı
Lefkoşa-Girne Dolmuş ve Minibüs Güzergâhı
Girne-Lefkoşa Dolmuş ve Minibüs Güzergâhı
0
200
400
800

Appendix E: A Sample of Observation Form

OBSERVATION FORM ON BEHAVIOURAL MAPPING

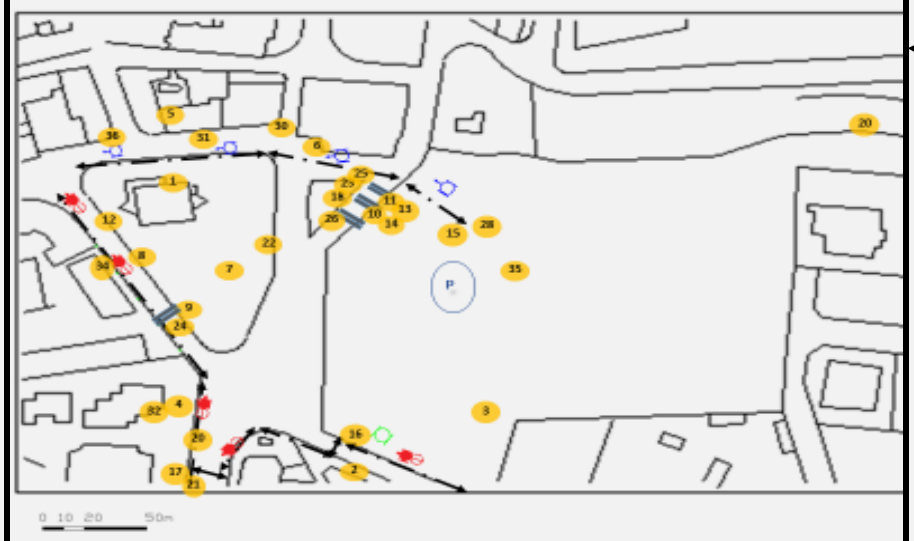
General Information on Observation	Observation date					Temporal characteristics of site	Weather conditions	windy/breezy rainy sunshine/cloudy damp/dry	Notes on other temporal events	
	Observation period						Temperature	warm/mild/cold		
	Observed sub-space	S1	S2	S3	S4		Situation in usage density	too calm/calm /moderate /crowded/overcrowded		

			Information about user												observed activities														
			Gender		Condition in mobility deficiency										Active							Passive					Self-control of activity		
Observatin no	Social interaction (SP;PP;TP;SG;BG)	User behaviour	Male	Female	Able-bodied person	Wheelchair user	Scooter user	People with walking frame	People with walking sticks	Hand&arm deficiencies	Pregnant women	Parents with pushchair	People with heavy luggage	Other mobility deficiencies	Walking on pavement	Walking on the ramp	Crossing the street	Parking the car	Getting on/off bus/taxi	Entering the retails	Using ATM/garbage bins	Sitting /Resting	Reading book/magazine	Chating	Eating/drinking	Others (buying/selling something; working; etc)	Activity with help	Activity without help	Notes on environmental qualities& affordances on activity&duration of an activity

Appendix F: Behavioural Maps

SD1-RAMADAN CEMİL SQUARE & ENVİRONS
WHEELCHAIR/SCOOTER USER

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Female wheelchair user walking together
- Male wheelchair user walking/passing through
- Male wheelchair user

PHYSICAL ENVIRONMENT QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

2

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6

1: Municipality building entrance way has uncomfortable ramp for wheelchair users.
2: Entrance wıth steps makes shopping inaccessible for wheelchair users.
3-4: Entrance way without ramps unsuitable to wheelchair confined people.
5-6: Inaccessible bank buildings with their stepped entrances without ramps.

PEDESTRIAN ROUTES

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7: Stepped pedestrian routes restrict wheelchair or scooter user's access.
8: Trees causes obstacle for wheelchair users.
9: Level differences without ramps impede wheelchair or scooter users to enter square.
10: Improperly designed pedestrian crossings
11: Pedestrian crossing without curb ramps.
12: Narrow ramp uncomfortable to wheelchair/scooter users access.

OPEN SPACE FACILITIES AND SERVICES

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13: ATM machınes are unavaılable for wheelchair user.
14: Underground toılets are inaccessible for wheelchair or scooter users.
15: Number of desıgnated parkıng facılıtıes ıs not sufficient and the location of parking facilities is far from the desired activities
17: Public transportation vehicles and drop-off zone is not suitable for inclusive access facilities.
18: The height of information map is not appropriate for wheelchair user.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

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23

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19: Unofficial bus stops is not suitable.
20: The main legal bus stop is too far from desıred activities
21: Public transportation vehicles are not available for wheelchair/scooter users.
22: Users parked their vehicles in pedestrian zone even there is a warning signage on prohibition of parking.
23. Weak maintenance of vegetation is problematic.
24: Weak maintenance of pedestrian crossings restrict wheelchair/scooter users access.

SOCIO-CULTURAL FEATURES

25

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25-26: Drivers have not respect to pedestrians they parked their vehicles in pedestrian lane.
27: Pedestrian crossings were blocked by parked vehicles.
28: Municipality need to placed signage as slogan of "bir de sen engel olma" against unrespectful behaviour of able-bodied users.
29-30: Business owners placed their furniture and stalls on the sidewalks.

SOCIO-ECONOMIC FEATURES

31

32

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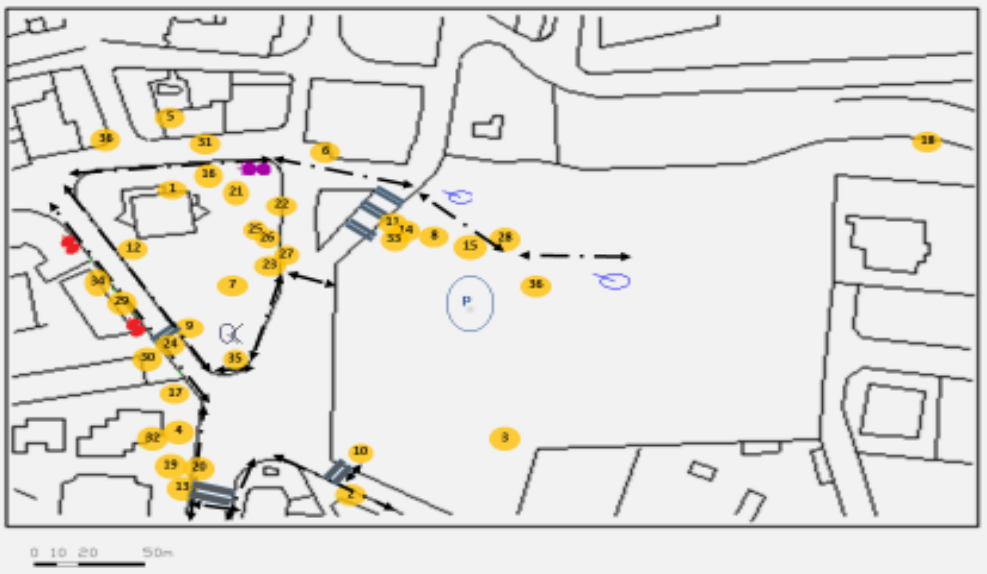
36

31: Tourist oriented prices is not suitable for unemployed or low-income disabled people.
32-33: Public facilities have to be purchased
34-35: Observed users have generally low or middle income
36: Public transportation facilities are free of charges for disabled people having special disability card, but vehicles are not accessible.

SD1-RAMADAN CEMİL SQUARE & ENVIRON
PEOPLE WITH WALKING DEFICIENCIES

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- P — Car parking
- Observed problems on inclusive access
- Female user with cane walking together
- Female user with mobility frame walking together
- Male user with walking sticks stopping and talking

PHYSICAL ENVIRONMENT QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

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3

4

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6

1: Gripping surfaces of handrails are not mounted, may be uncomfortable and unsafe for ambulatory disabled person
2: Floor surfaces is covered with slippery granite marble that ambulant disabled people may fall.
3: Steeped level differences without handrails limit access to shop.
4: Surface material of entrance is not slip-resistance, causes safety problems.
5-6: Unsuitable entrances way is trouble ambulant disabled people.

PEDESTRIAN ROUTES

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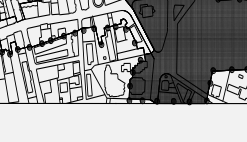

11

12

7: Level differences restrict usability of a square
8: Undulate texture of pedestrian road surfaces is hazardous
9: Level differences without handrails cause uncomfortable and unsafe use for ambulatory disabled people
10: Improperly design pedestrian crossings
11: Pedestrian crossing has not any curb ramp
12: Steep ramp without handrail is trouble people with walking deficiencies.

OPEN SPACE FACILITIES AND SERVICES

13

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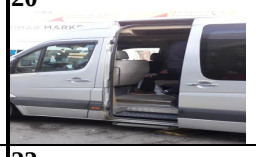
13: Public transportation vehicles and drop-off zone are not suitable to use of people with walking deficiencies.
14: Public toilets at the basement restrict disabled people access.
15: Swelling floor surfaces produces safety problems
16: Height of the sitting elements are not appropriate for ambulant users.
17: The utilisation of ATM Machine is troublesome.
18: Official bus stop is far from the desired, not presents comfortable access.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

20



21

22

23

24

19: Unofficial bus stops has not any curb ramp for drop-off facilities.
20: Public transportation vehicles are not suitable for ambulant disabled people.
21: Weak maintenance of pedestrian routes are troublesome.
22: Users parked their vehicles in pedestrian zone even there is a warning signage on prohibition of parking.
23: Overgrowth vegetation limit access of people with walking deficiencies.
24: Cracking surfaces of pedestrian crossings are hazardous.

SOCIO-CULTURAL FEATURES

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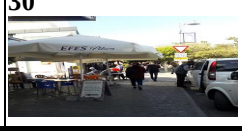


25-26: Ambulant disabled people access restricted with pedestrian routes that were occupied by parked vehicles.
27: Pedestrian crossings were blocked by parked vehicles.
28: Municipality need to placed signage as slogan of "bir de sen engel olma" against unrespectful behaviour of able-bodied users.
29-30: Municipality is not routinely control private sector attitudes in urban space

SOCIO-ECONOMIC FEATURES

31

32

33

34

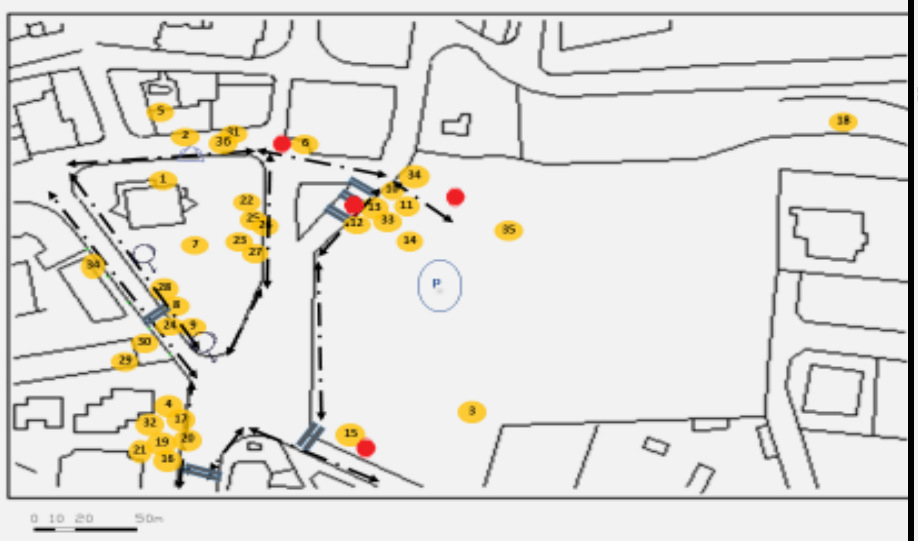
35

36

31: Tourist oriented prices is not suitable for unemployed or low-income disabled people.
32-33: Public facilities have to be purchased
34-35: Observed disabled users have generally low or middle income.
36: Elderly people do not prefer public transportation services.

SD1-RAMADAN CEMIL SQUARE & ITS NEAR VICINITY
PEOPLE WITH HAND AND ARM DEFICIENCIES

NORTH



LEGEND:

- Pedestrian movement
- Pedestrıan crossing
- Car parking
- Observed problems on inclusive access
- People with hand and arm deficiencies stopping/standing
- Male user with hand/arm deficiencies walking
- Male user with hand and arm deficiencies sitting alone.

PHYSICAL ENVIRONMENT QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

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3

4

5

6

1-2-3: Building entrances has granite or marble material which are not slip-resistant.
4: Handrails of ramps are not provided suitable use.
5-6: The entrance width is not suitable with the overall usage density.

PEDESTRIAN ROUTES

7

8

9

10

11

12

7.-8: Level differences are not comfortable.
9: Trees create an obstacle on the pathway.
10-11: Pedestrian crossings without curb ramps are not provided dignity, safety and comfort in use.
12: Undulate texture of pathway is not safe.

OPEN SPACE FACILITIES AND SERVICES

13

14

15

16

17

18

13: Garbage bins are not suitable to use of people with hand or arm deficiencies.
14: Entrance ways of toilets are hazardous.
15: ATMs are not appropriate for the use of people with hand or arm deficiencies.
16: Stairs without handrails are not safe.
17: Able-bodied people uses stairs at the entrance ways as a bus stop.
18: Legal bus stop is far from desired activities.

SOSCIO-POLITIC FEATURES

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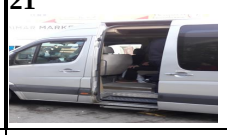
21



22

23

24

19: Public transportation vehicles uses illegal place as a transit stop.
20: Private sector is not regularly controlled.
21: Public transportation vehicles are not comfortable and suitable to overall usage density.
22: Weak legislation policies restrict pedestrian usage.
23-24: Weak maintenance services beneath dignity of users.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-CULTURAL FEATURES

25

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25-26-27: Parked vehicles occupied pedestrian pavements.
28: Impolite drivers are not stop pedestrian crossings.
29-30: Business owners fulfilled sidewalks with their stalls and furniture.

SOCIO-ECONOMIC FEATURES

31

32

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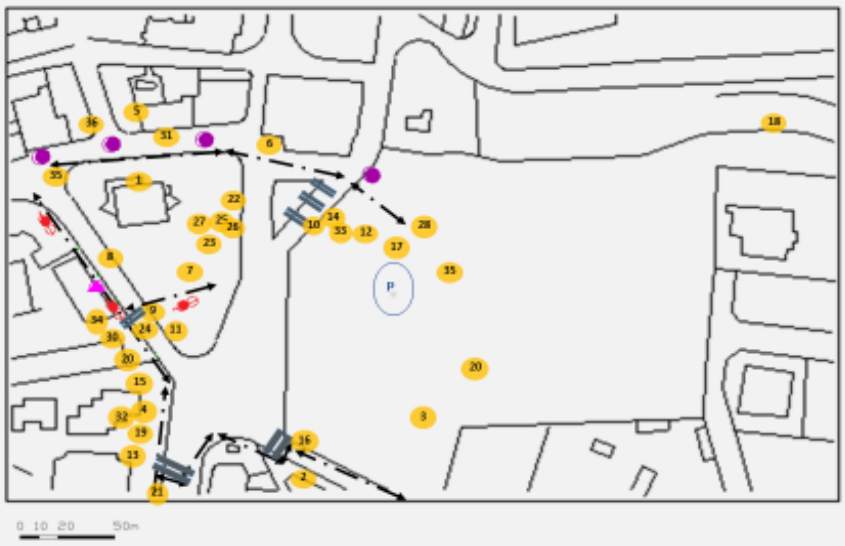
36

31: Prices are tourist-oriented and they are very expensive.
32-33: Fees of public facilities is too much for people owning low-income
34-35-36: SD1 are mainly used by able-bodied who are tourists and soldiers during the weekend. But local officers and workers with middle income are used SD1 at the weekdays.

SD1-RAMADAN CEMİL SQUARE & ITS NEAR VICINITY PREGNANT WOMEN



LEGEND:

- Pedestrian movement
- Pedestrian crossıng
- Car parking
- Observed problems on inclusive access
- Pregnant woman walking together
- Pregnant woman stopping/standing
- Pregnant woman is sitting

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

2

3

4

5

6

1: Stairs have not suitable handrails.
2: Slippery floor surfaces create safety problems for a pregnant women.
3: Level differences are provided uncomfortable use
4: Steep level differences without ramps are troublesome.
5-6: Slippery floor surfaces are not provided safety, comfort and dignity in use.

PEDESTRIAN ROUTES

7

8

9

10

11

12

7: Level differences restrict usability.
8: Tree creates an obstacle on the pathway.
9: Level differences without ramps are not safe.
10: Pedestrian crossings without curb ramps restrict pregnant women usage.
11: Manholes which were located on the sidewalks causes unsafe use
12: Undulate texture of pathways are not suitable.

OPEN SPACE FACILITIES AND SERVICES

13

14

15

16

17

18

13: Public transportation facilities are not comfortable.
14: Underground toilets causes safety problems.
15: Level difference at the entrance ways of toilets are not provided comfortable use.
16: Unsuitable seat heights.
17: Car parking place is far from desired activities.
18: Lack of bus stops restrict accessibility to the area.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

20

21

22

23

24

19: Unofficial place are used as a bus stop.
20: Private sector is not routinely controlled.
21: There is not regular parking control and so drivers parked their vehicles on pedestrian routes.
22-23: Weak maintenance of pedestrian routes are troublesome.
24: Regulations on traffic are not provided safety use.

SOCIO-CULTURAL FEATURES

25

26

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25-26: Parked vehıcles blocked the pedestrian routes and impede accessibility of pregnant women pedestrians.
27-28: Drivers are impolite to pregnant women who wants to crossing the street.
29-30: Business owners placed their stalls and furnishing elements on the sidewalks.

SOCIO-ECONOMIC FEATURES

31

32

33

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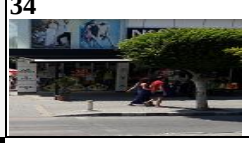


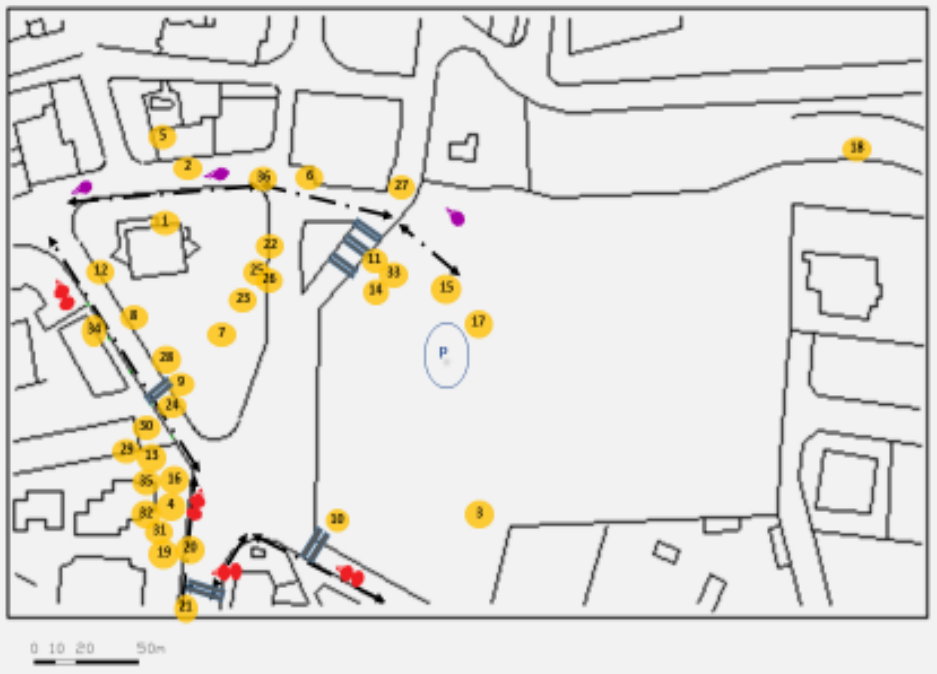
35

36

31: Prices are too expensive for eating or drinking somethings
32-33: Public services are not free of charge and their prices are tourist-oriented
36: During the observation, it was not determined any pregnant women while purchasing for something.

SD1-RAMADAN CEMİL SQUARE & ITS NEAR VICINITY
PEOPLE WITH PUSHCHAIR

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossıng
- Car parking
- Observed problems on inclusive access
- Female pushchair user walking together
- Female pushchair users walking/passin

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1


2


3


4


5


6


1: Ramp width is not appropriate for parents who use double pushchairs.
2: Congested entrance ways are troublesome parents with pushchairs.
3-4: The entrance with steps are not accessible.
5-6: Single steeped entrance ways and inaccessible door openings for pushchair users.

PEDESTRIAN ROUTES

7


8


9


10


11


12


7: Stepped entrance ways in the square are not comfortable to pushchair users.
8: Tree was blocked the pushchair user access.
9: Level differences are not usable.
10: Pedestrian crossings without medians.
11: Pedestrian crossings without curb ramps.
12: Width of ramps are not available for pushchair users.

OPEN SPACE FACILITIES AND SERVICES

13


14


15


16


17


18


13: ATMs are not accessible because of their unsuitable front approach.
14: Underground toilets are inaccessible for pushchair user parents.
15: Pedestrian crossings are blocked with the safety bollards.
16: Toilets facilities are not available without diaper changing facilities.
17: Joints of stone paving material are not suitable for pushchair users

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19


20


21


22


23


24


19: Illegal place is used as drop-off services.
20: Unsuitable public transportation vehicles.
21: Poor maintenance of pedestrian crossings creates risks for hazards
22: Weak management services and insufficient park controlling obstacle pushchair users.
23: Overgrowth vegetation are troublesome
24: Weak maintenance of pedestrian crossings are unsafe for pushchair user parents.

SOCIO-CULTURAL FEATURES

25


26


27


28


29


30


25-26: Parked vehicles on sidewalks inhibit usage.
27: Parked vehicles at the entrance of pedestrian way obstacle to users with pushchairs.
28: Disrespectful behaviour of vehicle drivers may causes pedestrian accidents
29 -30: Business owners placed their stalls and street furnishing elements and they restrict access of parents with pushchairs.

SOCIO-ECONOMIC FEATURES

31


32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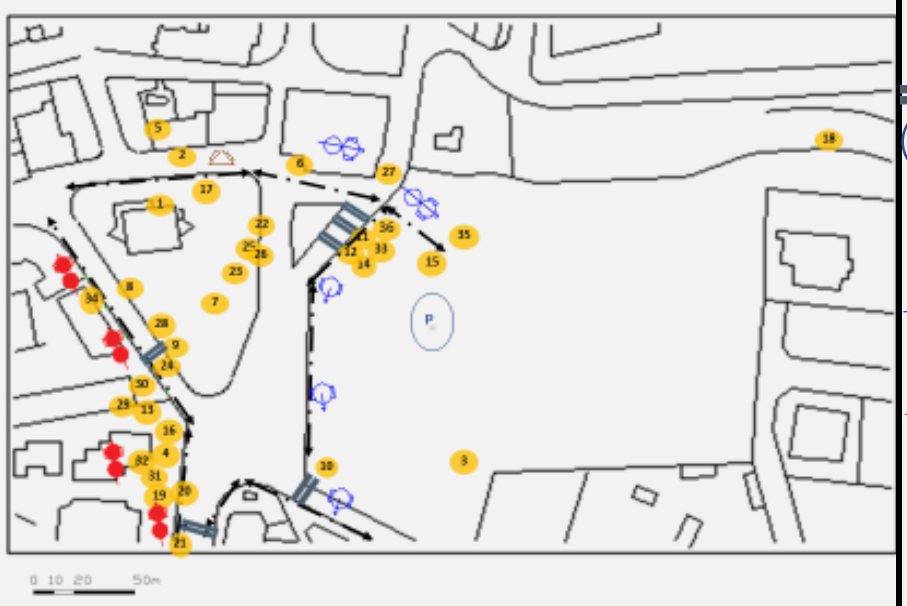
36


31: Prices are too expensive for parents having low-income
32-36: Public services is charged to tourist-oriented fees.

SD1-RAMADAN CEMİL SQUARE & ITS NEAR VICINITY
PEOPLE WITH HEAVY LUGGAGE/LOAD

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- Male with heavy loads are walking together
- Female with heavy loads walking together
- Male with heavy luggage walking alone
- Male with heavy luggage sitting alone

PHYSICAL ENVIRONMENT QUALITY

BUILDING ENTRANCES AND ENVIRONS

1


2


3


4


5


6


1: Uncomfortable ramp at the entrance way
2: Slippery floor surfaces are not safe
3-4: Stairs without ramps are hazardous and uncomfortable to people with heavy loads.
5-6: Slippery floor surfaces, unsuitable door openings and steep single steps at the entrance way are not suitable to usage of people with heavy loads.

PEDESTRIAN ROUTES

7


8


9


10


11


12


7: Stepped pedestrıan routes of square limited accessibility and creates problems on safety and comfort.
8: Trees blocked pedestrians with heavy loads.
9: Level differences without ramps are troublesome.
10-11: Improperly desıgned pedestrıan crossıngs are not safe
12: Pedestrian crossings without curb ramps are not available for people with heavy luggage.

OPEN SPACE FACILITIES AND SERVICES

13


14


15


16


17


18


13. The number of street furnishing elements is not sufficient
14: Underground toılets are tiresome.
15: Number of the designated parking facilities is not sufficient and the location of parking facilities is far from the desired activities.
16: Entrance way of toilet is not safe.
17: Improperly design sitting elements are not convenient.
18: The legal bus stop is too far from desired activities.

SOCIAL ENVIRONMENTAL QUALITY

SOSCIO-POLITIC FEATURES

19


20


21


22


23


24


19: Lack of bus stop in the SD1.
20: Public transportation vehicles are not usable for people with heavy loads.
21: Weak maintenance of pedestrian routes creates safety problems.
22: Users parked their vehicles in pedestrian zone even there is a warning signage on prohibition of parking.
23: Weak maintenance of vegetation restrict access.
24: Weak maintenance of pedestrian crossings causes problems in usage.

SOCIO-CULTURAL FEATURES

25


26


27


28


29


30


25-26: Drivers have not respect to pedestrians they parked their vehicles in pedestrian lane.
27: Parked vehicles on pedestrian crossings inhibit usage.
28: Drivers have not respect to wheelchair pedestrians while they are crossing the traffic lane.
29-30: Business owners placed shop stalls and furniture's on the sidewalks that impede accessibility

SOCIO-ECONOMIC FEATURES

31


32


33

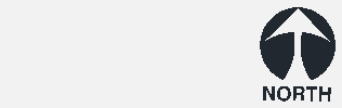

34

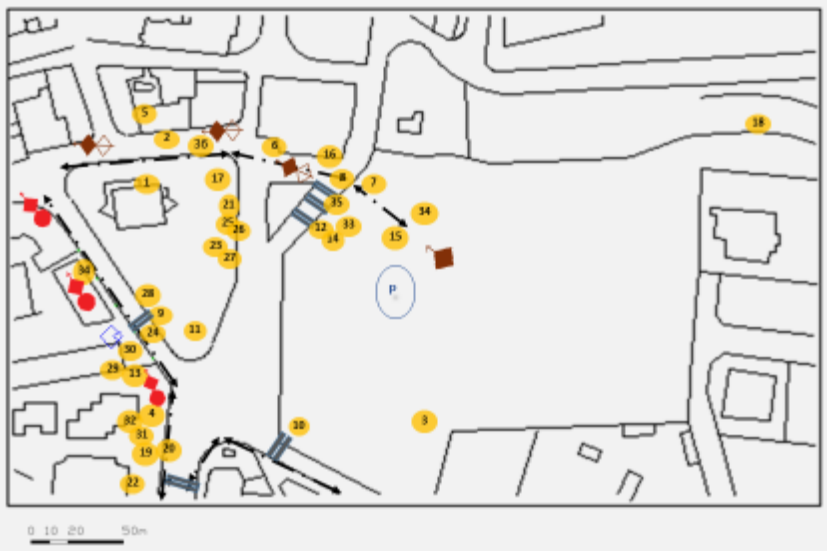

35


36


31-32: Menu prices are expensive because they are tourist oriented.
35-36: Charges of public transportation facilities are expensive for people with a heavy luggage.

SD1-RAMADAN CEMİL SQUARE & ITS NEAR VICINITY
ELDERLY PEOPLE





LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- Female elderly user walking together
- Male and female elderly user walking together
- Female elderly user walking/passing through

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

2

3

4

5

6

1: Gripping surfaces of handrails are not mounted, may be uncomfortable and unsafe for elderly people.
2: Floor surfaces is covered with slippery granite marble that elderly people may fall.
3: Steeped level differences without handrails limit access to shop.
4: Surface material of entrance is not slip-resistance, causes safety problems.
5-6: Unsuitable entrances way is troublesome for elderly users.

PEDESTRIAN ROUTES

7

8

9

10

11

12

7: Undulated texture of pedestrian routes causes problems in usage.
8: Elderly people prefer to jay walk, because of the unsuitable pedestrian crossing surfaces
9: Level differences without ramps are not usable.
10: Improperly designed pedestrian crossings without medians
11: Manholes were placed on the pedestrian routes.
12: Pedestrian crossings without curb ramps.

OPEN SPACE FACILITIES AND SERVICES

13

14

15

16

17

18

13: Public transportation vehicles are not suitable.
14: Inaccessible public toilets with their entrance ways.
15: Car parking is far from desired activities.
16: Sitting elements are not offer comfortable use to elderly people.
17: Unclear signages for the elderly
18: Uniques bs stop is too far from desired activities.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

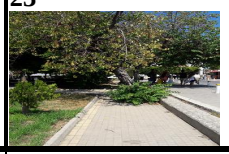
19

20

21

22

23



24

19: Public transportation vehicles are used unofficial place as transit stops.
20: Weak controlling practices toward private sector create problems.
21: There is not routine parking control.
22: Weak maintenance of pedestrian route surfaces causes safety problems.
23: Weak maintenance of overgrowth vegetation
24: Pedestrian crossings are not regularly maintained.

SOCIO-CULTURAL FEATURES

25

26

27

28

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25-26-27: Disrespectful behaviour of drivers restrict elderly pedestrians.
28-29-30: Business owners placed their stalls on sidewalks.

SOCIO-ECONOMIC FEATURES

31

32

33

34

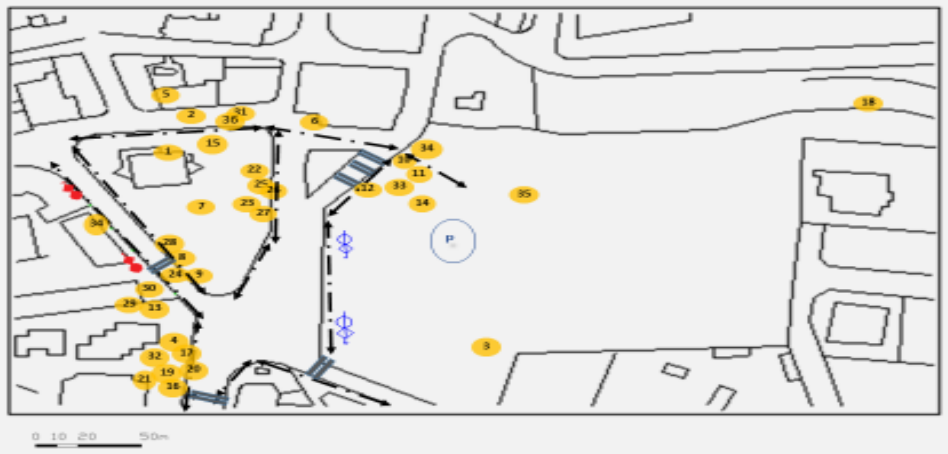
35

36

31: Eating prices are expensive for retired elderly people.
32-33: Tourist-oriented fees of public services are expensive for the elderly people.
34-35-36: Activities are unaffordable for local people.

SD1-RAMADAN CEMİL SQUARE & ITS NEAR VICINITY
CHILDREN UNDER SEVEN YEARS OLD

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on ınclusıve access
- A girl walking together with her parents
- A boy walking together with his parents

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1


2


3


1-2-3: Building entrance ways are not safe for children.
4-5-6: Door openings of buildings are hazardous for children and they causes safety problems.

4


5


6


PEDESTRIAN ROUTES

7


8


9


7: Stepped pedestrian route of square are not safe to children.
8: Trees blocked access and not provided comfortable use.
9: Level differences without ramps are not suitable for children.

10


11


12


10: Improperly designed pedestrian crossings are unsafe and uncomfortable.
11: Pedestrian crossing without curb ramps are not safe and children may require help.
12: Undulated texture of pedestrian ways causes safety problems

OPEN SPACE FACILITIES AND SERVICES

13


14


15


13: Public transportation vehicles are not suitable to children
14: Underground toılets are ınaccessıble children.
15: There is not any facilities for children
16: Entrance way of toilet is an inaccessible with steps
17: Public transportation vehicles and drop-off zone is not suitable for inclusive access facilities.
18: The height of informatıon map is not appropriate.

16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18


SOCIO-POLITIC FEATURES

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19: Unofficial bus stops is not suitable for children
20: The main legal bus stop is too far from desired activities
21: Public transportation vehicles are not available for children.
22: Users parked their vehicles in pedestrian zone even there is a warning signage on prohibition of parking.
23: Weak maintenance of vegetation restrict pedestrians as children.
24: Weak maintenance of pedestrian crossings restrict children access.

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SOCIO-CULTURAL FEATURES

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25-26-27: Parked vehicles on the sidewalks restrict children to use square.
28: Drivers are not polite to children.
29-30: Business owners fulfilled sidewalks with their stalls that creates an obstacle for children

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SOCIO-ECONOMIC FEATURES

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31-32: Menü prices are expensive.
33-34: Public toilets facilities have to be purchased by children.
35-36: Public transporation facilities is expensive for children and their parents.

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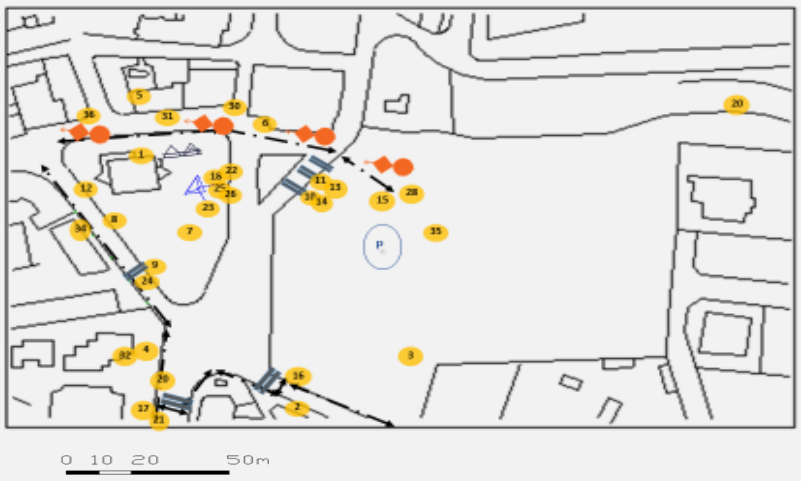
SOCIAL ENVIRONMENTAL QUALITY

SD1-RAMADAN CEMİL SQUARE & ENVİRONS
PEOPLE WITH OTHER IMPAIRMENT

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- A woman with other impairment is walking
- A man with other impairment is sitting and talking
- A man is sitting and talking together

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS


1: Municipality building entrance way has uncomfortable ramp for people with impairments.


2: Level differences at entrance ways creates safety problems.


3-4: Entrance way without ramps unsuitable.


5-6: Inaccessible bank buildings with their stepped entrances without ramps.

PEDESTRIAN ROUTES


7: Stepped pedestrian routes restrict use of square by people with impairments.


8: Overgrowth vegetation obstacle people with impairments.


9: Level differences without ramps is not safe.


10: Improperly designed pedestrian crossings


11: Pedestrian crossing without curb ramps.


12: Narrow ramp is uncomfortable for people with impairments.

OPEN SPACE FACILITIES AND SERVICES


13: ATM are not usable for very short person.


14: Underground toılets are not accessible and usable.


15: Number of desıgnated parkıng facılıtıes ıs not sufficient and the location of parking facilities is far from the desired activities.

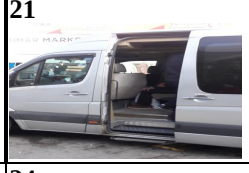

17: Public transportation vehicles and drop-off zone is not suitable for inclusive access facilities.


18: The height of information map is not appropriate for very short person.

SOCIO-POLITIC FEATURES


19: Unofficial bus stops is not suitable.


20: The main legal bus stop is too far from desıred activities


21: Public transportation vehicles are not available for wheelchair/scooter users.


22: Users parked their vehicles in pedestrian zone even there is a warning signage on prohibition of parking.


23. Weak maintenance of vegetation is problematic.


24: Weak maintenance of pedestrian crossings restrict accessibility in urban square.

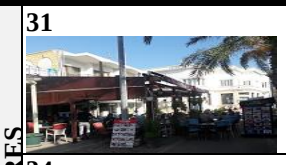
SOCIO-CULTURAL FEATURES


25-26: Drivers have not respect to pedestrians they parked their vehicles in pedestrian lane.

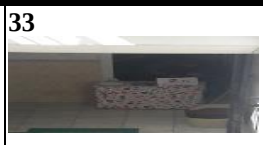

27-28: Pedestrian crossings were blocked by parked vehicles.


29-30: Business owners placed their furniture and stalls on the sidewalks.

SOCIO-ECONOMIC FEATURES


31: Tourist oriented prices is not suitable for unemployed or low-income disabled people.

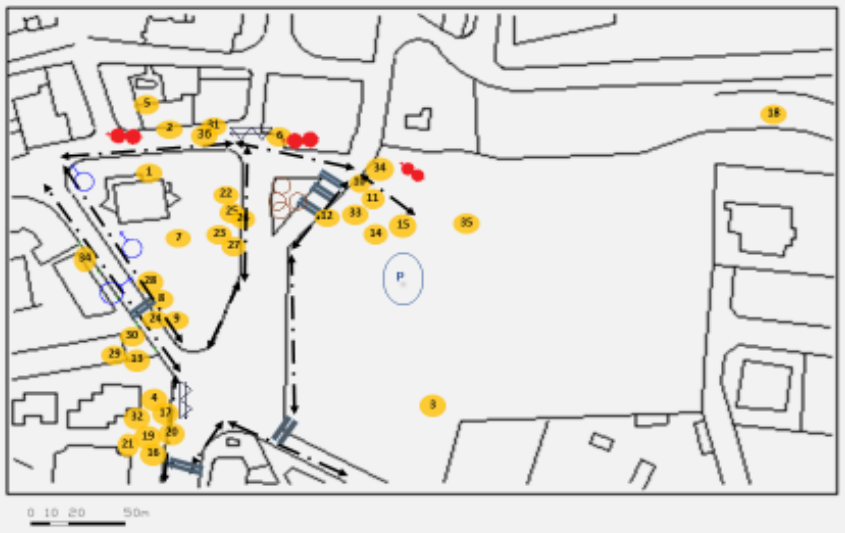

32-35: Public facilities have to be purchased


36: Public transportation facilities are free of charges for disabled people having special disability card.

SOCIAL ENVIRONMENTAL QUALITY

SD1-RAMADAN CEMIL SQUARE & ITS NEAR VICINITY
ABLE-BODIED PEOPLE

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- Able-bodied women walking together
- Able-bodied man stopping/standing
- Able-bodied man walking/passing through
- Able-bodied men sitting together

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

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1-2-3: Building entrances has granite or marble material which are not slip-resistant.
4: Stairs without handrails are not provided comfort in use.
5-6: The entrance width are not suitable with the overall usage density.

PEDESTRIAN ROUTES

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7.-8: Level differences are not comfortable.
9: Trees create an obstacle on the pathway.
0-11: Pedestrian crossings without curb ramps are not provided dignity, safety and comfort in use.
12: Undulate texture of pathway is not safe for able-bodied users.

OPEN SPACE FACILITIES AND SERVICES

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13: Car parking place is far from desired activities.
14: Entrance ways of toilets are hazardous.
15: Number of the car parking is not sufficient and mismatch to overall usage density.
16: Stairs without handrails are not safe.
17: Able-bodied people uses stairs at the entrance ways as a bus stop.
18: Legal bus stop is far from desired activities.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

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19: Public transportation vehicles uses illegal place as a transit stop.
20: Private sector is not regularly controlled.
21: Public transportation vehicles are not comfortable and suitable to overall usage density.
22: Weak legislation policies restrict pedestrian usage.
23-24: Weak maintenance services beneath dignity of users.

SOCIO-CULTURAL FEATURES

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25-26-27: Parked vehicles occupied pedestrian pavements.
28: Impolite drivers are not stop pedestrian crossings.
29-30: Business owners fulfilled sidewalks with their stalls and furniture.

SOCIO-ECONOMIC FEATURES

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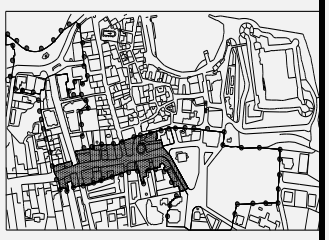
31: Prices are tourist-oriented and they are very expensive.
32-33: Fees of publıc facacilities is too much for people owning low-income
34-35-36: SD1 are mainly used by able-bodied who are tourists and soldiers during the weekend.

SD2-ZIYA RIZKI STREET WHEELCHAIR/SCOOTER USER



NORTH

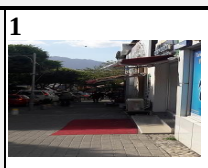
LEGEND:

- Pedestrıan movement
- Pedestrian crossing
- P — Car parking
- Observed problems on inclusive access
- Female wheelchair user walking together
- Male wheelchair user stopping

PHYSICAL ENVIRONMENT QUALITY

BUILDING ENTRANCES AND ENVIRONS

1



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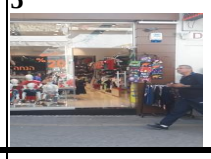

6

1: Unsuitable material at entrance way cause safety problems.
2-3: Inaccessible entrances which have steps without ramps restrict usage by wheelchair confined person.
4-5: Unsuitable step and slippery surface at the entrance threshold.
6: Improperly designed entrance way without manoeuvring space for wheelchair users.

PEDESTRIAN ROUTES

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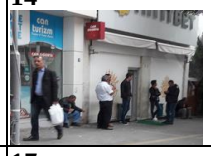
7: Sidewalk gradient makes wheelchair travel uncomfortable and unsafe.
8: Obstructions on the sidewalk restrict wheelchair/scooter users access.
9: Lighting element at the middle of sidewalk create risks for hazards.
10: Narrow pavement with obstacles is uncomfortable for wheelchair/scooter users.
11: Improper design of pedestrian crossing creates safety problems.
12: Pedestrian density on sidewalks restrict wheelchair/scooter users access.

OPEN SPACE FACILITIES AND SERVICES

13

14



15

16

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18

13: Existing street furnishing elements are not suitably designed and placed along the street.
14: The street has not accessible ATMs.
15: Pedestrian crossings without signage is not appropriate for pedestrian safety
16-17: Street furnishing elements create an obstacle for the wheelchair confined people.
18: Bollards which were not placed street corner, is not provide safe use in the street.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

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24

19-20: Weak legislation policies impede accessibility.

21-22: Poor maintenance facilities of pedestrian routes creates risks for hazards.

23-24: Absence of regular maintenance facilities produces inaccessible sidewalks for wheelchair users.

SOCIO-CULTURAL FEATURES

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25: Parked vehicles and shop stalls are troublesome for wheelchair users.

26-27: Impolite behaviour of other users restrict usage.

28-29: Impolite behaviour of business owners is obstacle for usage.

30: Congested pavements restrict usage of wheelchair confined people.

SOCIO-ECONOMIC FEATURES

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32-33: Low-income level wheelchair users were observed along the street.

34-35: Tourist-oriented menu prices are expensive for the wheelchair user.

36: Wheelchair users with middle-income level were observed.

SD2-ZIYA RIZKI STREET
PEOPLE WITH WALKING DEFICIENCIES

NORTH

LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- A woman with walking sticks is walking
- A man with walking sticks is standing and talking
- A man with walking sticks is walking

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

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1: Unsuitable material at entrance way cause safety problems.
2-3: Gradient at the entrance ways do not offer comfortable use.
4-5: Unsuitable step and slippery surface at the entrance threshold.
6: Improperly designed entrance way at the street corner is dangerous.

PEDESTRIAN ROUTES

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7: Sidewalk gradient makes walking journey uncomfortable.
8: Obstructions on the sidewalk limits accessibility of users.
9: Lighting element at the middle of sidewalk create risks for hazards.
10: Narrow pavements is not suitable to usage density.
11: Improper design of pedestrian crossing creates safety problems.
12: Pedestrian crossings are not provided safe use.

OPEN SPACE FACILITIES AND SERVICES

13

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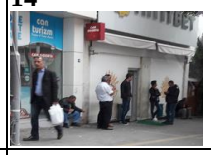

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13-15: Existing street furnishing elements are not suitably designed and placed along the street.
16: Pedestrian crossings without signage is not appropriate for pedestrian safety
17-18: Street furnishing elements create an obstacle.

SOCIO-POLITIC FEATURES

19

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19-20: Weak legislation policies impede accessibility.
21-22: Poor maintenance facilities of pedestrian routes creates risks for hazards.
23-24: Absence of regular maintenance facilities produces inaccessible sidewalks for people with walking deficiencies.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-CULTURAL FEATURES

25

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25: Parked vehicles and shop stalls are troublesome for people with walking deficiencies.
26-27: Impolite behaviour of other users restrict usage.
28-29: Impolite behaviour of business owners is obstacle for usage.
30: Congested pavements are limited usage of sidewalks for people with walking deficiencies.

SOCIO-ECONOMIC FEATURES

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31-35: Tourist-oriented menu prices are expensive for people with walking deficiencies.
36: Tourists and local people with walking deficiencies were observed.

SD2-ZIYA RIZKI STREET
PEOPLE WITH HAND AND ARM DEFICIENCIES

NORTH

LEGEND:

- Pedestrian Movement
- Pedestrian Crossing
- Car Parking
- Observed problems on inclusive access
- A female user with hand and arm deficiencies is walking

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

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1: Unsuitable material at entrance way cause safety problems.
2: Door openings are not suitable for the use of people with hand and arm deficiencies.
4-5: Unsuitable step and slippery surface at the entrance threshold.
6: Improperly designed entrance way is dangerous.

“

PEDESTRIAN ROUTES

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7: Sidewalk gradient do not offer comfortable use.
8: Obstructions on the sidewalk restrict usage of people with hand and arm deficiencies.
9: Manholes causes safety problems.
10: Narrow pavements are not provided comfortable use.
11: Improper design of pedestrian crossing creates safety problems
12: Pedestrian density on sidewalks restrict usage.

OPEN SPACE FACILITIES AND SERVICES

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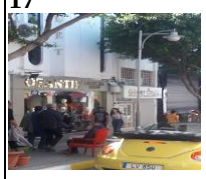

18

13-14: Existing street furnishing elements are not suitably designed and placed along the street.
15-16: Pedestrian crossings without signage is not appropriate pedestrian safety
18: Bollards which were not placed street corner, is not provide safe use in the street.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

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19-20: Weak legislation policies impede accessibility.
21-22: Poor maintenance of pedestrian routes creates risks for hazards.
23-24: Absence of regular maintenance facilities produces inaccessible sidewalks for the people with hand and arm deficiencies.

SOCIO-CULTURAL FEATURES

25

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25: Parked vehicles occupied pedestrian pavements and indicates unrespectful behaviour of able-bodied users
26-27: Impolite behaviour of other users restrict usage.
28-29: Impolite behaviour of business owners is obstacle for usage.
30: Congested pavements were limited use of street for people with hand and arm deficiencies.

SOCIO-ECONOMIC FEATURES

31

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31-33: Unaffordable public facilities for unemployed disabled person.
34-36: Tourist-oriented menu prices are expensive for people with hand and arm deficiencies.

SD2-ZIYA RIZKI STREET
PREGNANT WOMEN

NORTH

LEGEND:

- Pedestrian movement
- Pedestrian crossing
- P — Car parking
- Observed problems on inclusive access
- Pregnant women is standing.
- Pregnant women is walking together with someone.

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

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1: Unsuitable material at entrance way cause safety problems.
2-3: Entrances without ramps are dangerous for pregnant women.
4-5: Unsuitable step and slippery surface at the entrance threshold.
6: Undulated texture of entrance way do not offer safe and comfortable use for pregnant women.

PEDESTRIAN ROUTES

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7: Sidewalk gradients are uncomfortable and unsafe.
8: Obstructions on the sidewalk restrict access.
9: Lighting element at the middle of sidewalk create risks for hazards.
10: Narrow pavement with obstacles is uncomfortable.
11: Improper design of pedestrian crossing creates safety problems.
12: Pedestrian density on sidewalks is dangerous for pregnant women.

OPEN SPACE FACILITIES AND SERVICES

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13: Existing street furnishing elements are not suitably designed and placed along the street.
14: The street has not accessible ATMs.
15-16: Pedestrian crossings without signage is not appropriate for pedestrian safety
17: Street furnishing elements at the middle of the pedestrian crossing create safety problems.
18: Bollards which were not placed street corner, is not provide safe use in the street.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

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19-20: Weak legislation policies impede accessibility.

21-22: Poor maintenance facilities of pedestrian routes creates risks for hazards.

23-24: Absence of regular maintenance facilities produces inaccessible sidewalks.

SOCIO-CULTURAL FEATURES

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25: Parked vehicles and shop stalls are troublesome.
26-27: Impolite behaviour of other users restrict usage.
28-29: Impolite behaviour of business owners is obstacle for usage.
30: Congested pavements are dangerous for pregnant women.

SOCIO-ECONOMIC FEATURES

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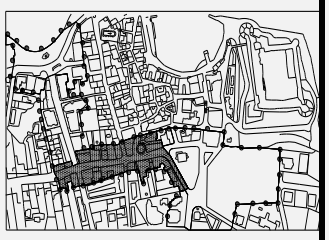
32-33: Pregnant women with middle-income level were mainly observed along the street.
34-35: Tourist-oriented menu prices are expensive for local people as pregnant women.
36: Public transportation is not available and taxi prices are too high.

SD2-ZIYA RIZKI STREET
PARENTS WIRH PUSHCHAIRS



NORTH

LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- Female users with pushchair are walking
- Parent with pushchairs are walking

PHYSICAL ENVIRONMENT QUALITY

BUILDING ENTRANCES AND ENVIRONS

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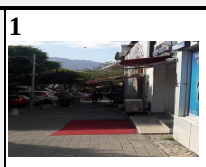

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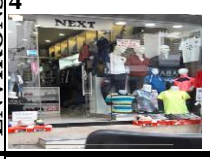

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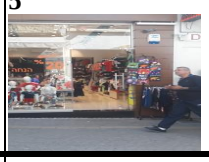

6

1: Unsuitable material at entrance way cause safety problems.
2-3: Inaccessible entrances which have steps without ramps restrict usage for parents with pushchairs.
4-5: Unsuitable step and slippery surface at the entrance threshold.
6: Improperly designed entrance way without manoeuvring space for pushchair users.

PEDESTRIAN ROUTES

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7: Sidewalk gradient makes travel uncomfortable and unsafe.
8: Obstructions on the sidewalk restrict pushchair users access.
9: Lighting element at the middle of sidewalk create risks for hazards.
10: Narrow pavement with obstacles is uncomfortable for parents with pushchairs.
11: Improper design of pedestrian crossing creates safety problems.
12: Pedestrian density on sidewalks restrict pushchair users access.

OPEN SPACE FACILITIES AND SERVICES

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13-14: Existing street furnishing elements are not suitably designed and placed along the street.
15-16: Pedestrian crossings without signage is not appropriate for pedestrian safety
17: Street furnishing elements create an obstacle for parents with pushchairs.
18: Bollards which were not placed street corner, is not provide safe use in the street.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

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24

19-20: Weak legislation policies impede accessibility.
21-22: Poor maintenance facilities of pedestrian routes creates risks for hazards.
23-24: Absence of regular maintenance facilities produces inaccessible sidewalks for parents with pushchairs.

SOCIO-CULTURAL FEATURES

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25: Parked vehıcles and shop stalls are troublesome for parents with pushchairs.
26-27: Impolite behaviour of other users restrict usage.
28-29: Impolite behaviour of business owners is obstacle for usage.
30: Congested pavements restrict usage of parents with pushchairs.

SOCIO-ECONOMIC FEATURES

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31-36: Tourist-oriented menu prices are expensive for the parents.

SD2-ZIYA RIZKI STREET
PEOPLE WITH HEAVY LUGGAGE/LOAD

NORTH

LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- People with heavy luggage is walking together
- Male user with heavy luggage is walking
- Female user with heavy luggage are standing

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

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1: Unsuitable material at entrance way cause safety problems.
2-3: Entrances with high tresholds are not comfortable and safe for people with heavy luggage.
4-5: Unsuitable step and slippery surface at the entrance threshold.
6: Improperly designed entrance way is hazardous.

PEDESTRIAN ROUTES

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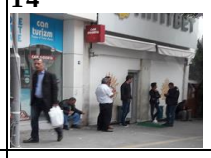
7: Sidewalk gradient is not provided comfortable use.
8: Obstructions on the sidewalk limit accessibility.
9: Lighting element at the middle of sidewalk create risks for hazards.
10: Narrow pavement with obstacles is uncomfortable and unsafe.
11: Improper design of pedestrian crossing creates safety problems.
12: Pedestrian density on sidewalks impede access of people with heavy loads.

OPEN SPACE FACILITIES AND SERVICES

13


14


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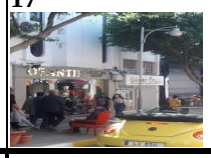

18


13-14: Existing street furnishing elements are not suitably designed and placed along the street.
15-16: Pedestrian crossings without signage is not appropriate for pedestrian safety.
17-18: Street furnishing elements create an obstacle for people with heavy luggage.

SOCIO-POLITIC FEATURES

19


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24


19-20: Weak legislation policies impede accessibility.
21-22: Poor maintenance facilities of pedestrian routes creates risks for hazards.
23-24: Absence of regular maintenance facilities produces inaccessible sidewalks.

SOCIO-CULTURAL FEATURES

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25: Parked vehıcles and shop stalls are troublesome for people with heavy luggage/load.
26-27: Impolite behaviour of other users restrict usage.
28-29: Impolite behaviour of business owners is obstacle for usage.
30: Congested pavements restrict usage of street by people with heavy luggage.

SOCIO-ECONOMIC FEATURES

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31-33: People with heavy luggage were observed along the street.
34-36: Tourist-oriented menu prices are expensive for people with heavy luggage.

SD2-ZIYA RIZKI STREET ELDERY PEOPLE

NORTH

LEGEND:
- Pedestrıan movement
- Pedestrıan crossıng
- Car parking
- Observed problems on inclusive access
- Elderly female user walking together
- Elderly male user standing
- Elderly male user

PHYSICAL ENVIRONMENT QUALITY

BUILDING ENTRANCES AND

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1: Unsuitable material at entrance way cause safety problems.
2: Inaccessible entrance with steps obstacle elderly people.
4-5: Unsuıtable step and slippery surface at the entrance threshold.
6: Improperly designed entrance way is hazardous.

PEDESTRIAN ROUTES

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7: Sidewalk gradient do not offer comfortable use.

8: Obstructions on the sidewalk restrict elderly people access.
9: Lighting element at the middle of sidewalk create risks for hazards.
10: Narrow pavement with obstacles is uncomfortable for elderly people.
11: Improper design of pedestrian crossing creates safety problems
12: Pedestrian density on sidewalks restrict elderly people usage.

OPEN SPACE FACILITIES AND SERVICES

13

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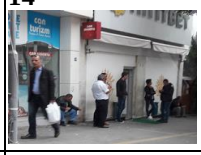

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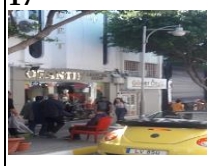

18

13: Existing street furnishing elements are not suitably designed and placed along the street.
14: The street has not any resting element.
15: Pedestrian crossings without signage is not appropriate pedestrian safety
16: There is not any bus stop due to streets are mainly used by passer byes.
17: Street furnishing elements create an obstacle for the elderly people.
18: Bollards which were not placed street corner, is not provide safe use in the street.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

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19-20: Weak legislation policies impede accessibility.
21-22: Poor maıntenance of pedestrian routes creates risks for hazards.
23-24: Absence of regular maintenance facilities produces inaccessible sidewalks for the elderly people.

SOCIO-CULTURAL FEATURES

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25: Parked vehıcles occupıed pedestrıan pavements and indicates unrespectful behaviour of able-bodıed users
26-27: Impolite behaviour of other users restrict usage.
28-29: Impolite behaviour of business owners is obstacle for usage.
30: Congested pavements were limited elderly people usage.

SOCIO-ECONOMIC FEATURES

31

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31: Unaffordable public facılıtıes for unemployed elderly person.
32-33: Low-income level elderly people were observed along the street.
34-35: Tourist-oriented menu prices are expensive for the elderly people.
36: The street is also used by tourists having middle or high income level.

SD2-ZIYA RIZKI STREET
CHILDREN UNDER SEVEN YEARS OLD

NORTH

LEGEND:

- Pedestrıan movement
- Pedestrian crossing
- P — Car parking
- Observed problems on inclusive access
- A girl is walking with her parents
- A girl is sitting with her parents
- A boy is standing

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS


1: Unsuitable material at entrance way cause safety problems.

2-3: Inaccessible entrances which have steps without ramps restrict usage for children.


4-5: Unsuitable step and slippery surface at the entrance threshold.


6: Entrance way at street corner is dangerous for children.

PEDESTRIAN ROUTES


7: Sidewalk gradient makes children travel uncomfortable and unsafe.


8: Obstructions on the sidewalks is hazardous for children.


9: Lighting element at the middle of sidewalk create risks for hazards.


10: Narrow pavement with obstacles is uncomfortable and unsafe for children.


11: Improper design of pedestrian crossing creates safety problems.


12: Pedestrian density on sidewalks creates safety problems.

OPEN SPACE FACILITIES AND SERVICES


13-14: Existing street furnishing elements are not suitably designed and placed along the street.


15: Pedestrian crossings without signage is not appropriate for pedestrian safety.


16-18: Street furnishing elements create an obstacle for children.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES


19-20: Weak legislation policies impede accessibility.


21-22: Poor maintenance facilities of pedestrian routes creates risks for hazards.


23-24: Absence of regular maintenance facilities produces inaccessible sidewalks for children.

SOCIO-CULTURAL FEATURES


25: Parked vehicles and shop stalls are troublesome for children with scooters.

26-27: Impolite behaviour of other users restrict usage.

28-29: Impolite behaviour of business owners is obstacle for usage.


30: Congested pavements restrict usage of parents with pushchairs.

SOCIO-ECONOMIC FEATURES


32-33: Selling products are expensive for children and their parents with low and middle income level.


34-36: Tourist-oriented menü prices are expensive for local children and their parents.

SD2-ZIYA RIZKI STREET PEOPLE WITH OTHER IMPAIRMENTS

NORTH

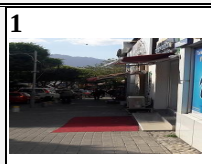
LEGEND:

- Pedestrian movement
- Pedestrian crosiing
- Car parking
- Observed problems on inclusive access
- A man with other impairment is walking together with someone
- A woman with other impairment is standing and talking
- A man with other impairment is walking

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1



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1: Unsuitable material at entrance way cause safety problems.
2-3: Inaccessible entrance with steps obstacle people with impairments.
4-5: Unsuitable step and slippery surface at the entrance threshold.
6: Improperly designed entrance way is hazardous.

PEDESTRIAN ROUTES

7

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7: Sidewalk gradient do not offer comfortable use.
8: Obstructions on the sidewalk impede people with other impairments.
9: Lighting element at the middle of sidewalk create risks for hazards.
10: Narrow pavement with obstacles is not provided safe and comfortable use.
11: Improper design of pedestrian crossing creates safety problems.
12: Pedestrian density on sidewalks restrict usage.

OPEN SPACE FACILITIES AND SERVICES

13

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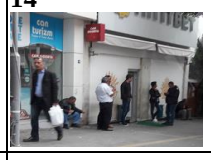

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13-14: Existing street furnishing elements are not suitably designed and placed along the street.
15-16: Pedestrian crossings without signage is not appropriate pedestrian safety
17: Street furnishing elements create an obstacle for people with impairments.
18: Bollards which were not placed street corner, is not provide safe use in the street.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

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24

19-20: Weak legislation policies impede accessibility.
21-22: Poor maintenance of pedestrian routes creates risks for hazards.
23-24: Absence of regular maintenance facilities produces inaccessible sidewalks for people with impairments.

SOCIO-CULTURAL FEATURES

25

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25: Parked vehicles occupied pedestrian pavements and indicates unrespectful behaviour of able-bodıed users
26-27: Impolite behaviour of other users restrict usage.
28-29: Impolite behaviour of business owners is obstacle for usage.
30: Congested pavements are troublesome for people with impairments.

SOCIO-ECONOMIC FEATURES

31

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31-33: Unaffordable public facilities for unemployed disabled person.
34-36: Tourist-oriented menu prices are expensive for people with other impairments.

SD2-ZIYA RIZKI STREET
ABLE-BODIED PEOPLE

NORTH

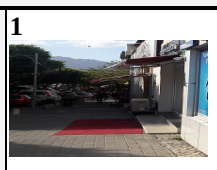
LEGEND:

- Pedestrıan movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- Able-bodied female user is walking
- Able-bodied female users are walking
- Able-bodied male use is sitting

PHYSICAL ENVIRONMENT AL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1



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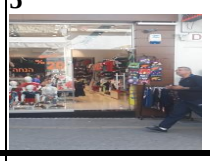

6

1: Unsuitable material at entrance way cause safety problems.
2-3: Gradient at the entrance ways do not offer comfortable use.
4-5: Unsuitable step and slippery surface at the entrance threshold.
6: Improperly designed entrance way at the street corner is dangerous.

PEDESTRIAN ROUTES

7

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7: Sidewalk gradient makes walking journey uncomfortable.
8: Obstructions on the sidewalk limits accessibility of users.
9: Lighting element at the middle of sidewalk create risks for hazards.
10: Congested pavements is not suitable to usage density.
11: Improper design of pedestrian crossing creates safety problems.
12: Pedestrian crossings are not provided safe use.

OPEN SPACE FACILITIES AND SERVICES

13

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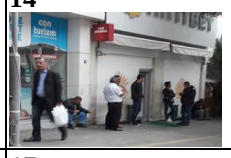

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18

13-15: Existing street furnishing elements are not suitably designed and placed along the street.
16: Pedestrian crossings without signage is not appropriate for pedestrian safety
17-18: Street furnishing elements create an obstacle.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

20

21

22

23

24

19-20: Weak legislation policies impede accessibility.
21-22: Poor maintenance facilities of pedestrian routes creates risks for hazards.
23-24: Absence of regular maintenance facilities produces risks for hazards.

SOCIO-CULTURAL FEATURES

25

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25: Parked vehicles and shop stalls on the sidewalks are troublesome for able-bodied pedestrians.
26-27: Impolite behaviour of other users restrict usage.
28-29: Impolite behaviour of business owners is obstacle for usage.
30: Congested pavements restrict usage of able-bodied pedestrians.

SOCIO-ECONOMIC FEATURES

31

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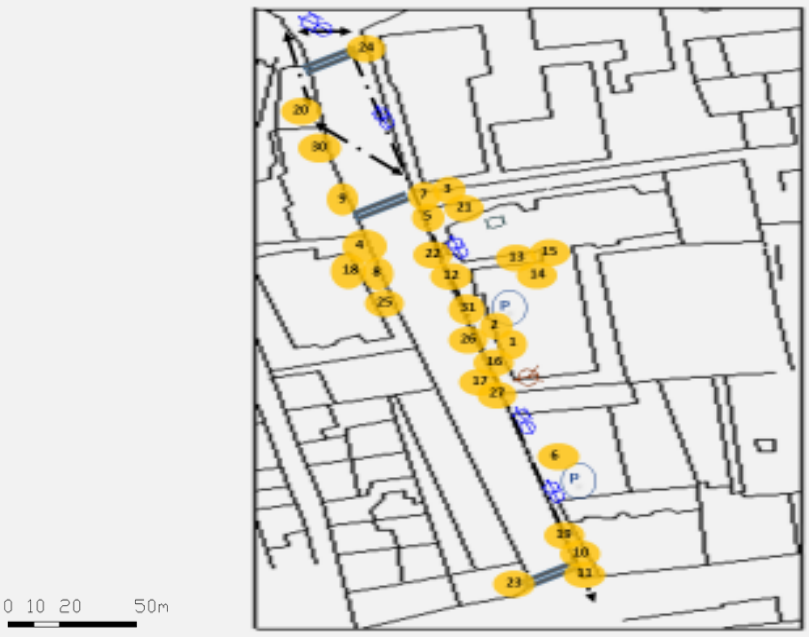
31-36: Tourist-oriented menu prices are expensive for the local people.

SD3-ATATÜRK STREET
PEOPLE WITH WHEELCHAIR/SCOOTER

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- Wheelchair user man is walking
- Scooter user is standing and talking

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

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1: Scooter user man couldn't enter shops and he prefer to wait outside while hıs family and friends were shopping
2: Narrow thresholds at entrances are not available for wheelchair/scooter users
3: Entrance ramp end with step and blocked by shop stalls.
4: Electricity office entrance have steps without ramps
5: Souvenir shop stalls are obstacle for wheelchair/scooter users
6: Narrow thresholds along congested narrow pavements creates dıfficulties for wheelchaır pedestrıans.

PEDESTRIAN ROUTES

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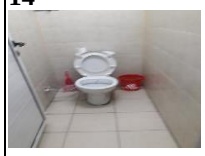
7: Narrow curb ramps wıth traffic bollards makes travel of wheelchaır/scooter user uncomfortable
8: Pushchair user pedestrıans walkıng ın the traffic lane because of the parked vehıcles on the pavement
9: Garbage bın creates an obstacle at the intersection of curb ramp
10: Crowded pavements restrıct movement of people wıth wheelchair/scooter
11: Improperly desıgned pedestrıan crossıngs is not safe and comfortable enough

OPEN SPACE FACILITIES AND SERVICES

13


14


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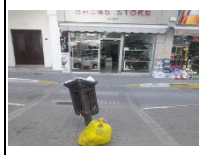

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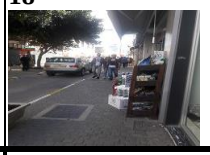

13-14: Underground toilets are inaccessible for wheelchair/scooter users.
15: Street furnishing elements that were placed at the middle of pedestrian crossings, impede wheelchair users.
16: Unsuitable drop-off zone for both wheelchair drivers and passengers.
17-18: The number of street furnishing elements are not enough.

SOCIO-POLITIC FEATURES

19


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19-20-21: Private sectors actions were not sufficiently controlled.
22: Local authority was not controlled parking facilities.
23-24: Poor maintenance of pedestrian crossings creates risks for hazards.

SOCIO-CULTURAL FEATURES

25


26


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25-26: Parked vehicles occupied pedestrian pavements.
27-28: Disability designated parking facilities occupied by able-bodied vehicle drivers.
29-30: Shop owners placed stalls at the entrance way

SOCIO-ECONOMIC FEATURES

31


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31-32: Unaffordable public facilities for unemployed wheelchair user.
33: There is not bus stops, taxi prices are too high.
34: Public toilet facilities have to be charged.
35-36: Selling products are too expensive for local wheelchair user people.

SD3-ATATÜRK STREET
PEOPLE WITH WALKING DEFICIENCIES

NORTH

LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- A woman with mobility frame is walking together
- A man with cane is walking

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1


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1-2: Slippery floor covering and steeped thresholds are dangerous for people with walking deficiencies .
3: Entrance way has ramp, but it was blocked by shop stalls.
4: Electricity office entranceway has not ramps and handrails.
5: Souvenir shop stalls restrict usage of entrance ways.
6: Surface material of entrance ways is not provided comfortable and safe use for people with walking deficiencies.

PEDESTRIAN ROUTES

7


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7-8: Parked vehicles on the sidewalks oblique people with walking deficiencies to walk in the traffic zone.
9: Steeped sidewalks are hazardous for peoplewith walking deficiencies.
10: Crowded pavements limited movement of people with walking deficiencies.
11-12: Improperly designed pedestrian crossings are not safe and comfortable enough.

OPEN SPACE FACILITIES AND SERVICES

13


14


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13-14: Underground toilets are inaccessible for people with walking deficiencies.
15: Street furnishing elements that were placed at the middle of pedestrian crossings, are troublesome.
16: Drop-off zone without curb ramps are inaccessible and dangerous.
17-18: The number of street furnishing elements are not enough.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19


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19-20-21: Private sectors actions were not sufficiently controlled.
22: Local authority was not controlled parking facilities.
23-24: Poor maintenance of pedestrian crossings creates risks for hazards.

SOCIO-CULTURAL FEATURES

25


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25-26: Parked vehicles occupied pedestrian pavements.
27-28: Disability designated facilities are occupied by able-bodied vehicle users.
29-30: Shop owners placed stalls at the entrance way.

SOCIO-ECONOMIC FEATURES

31


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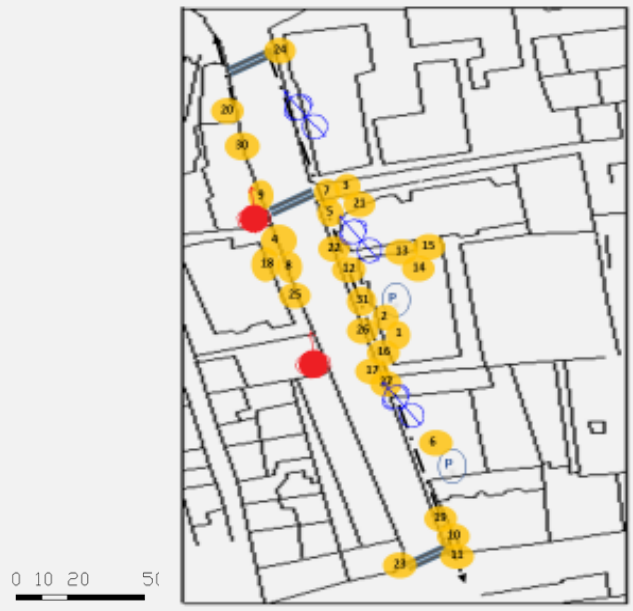
31-32: Unaffordable public facilities for unskilled disabled person.
33: There is not bus stops, taxi prices are too high.
34: Public toilet facilities have to be charged.
35-36: Selling products are too expensive .

SD3-ATATÜRK STREET
PEOPLE WITH HAND AND ARM DEFICIENCIES

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- A woman with hand and arm deficiency is walking
- A man with hand and arm deficiency is walking together with someone

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

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6


1-2: Level differences are dangerous.
3: Entrance way has ramp, but it is blocked by shop stalls.
4: Electricity office entranceway has not ramps and handrails.
5: Souvenir shop stalls restrict usage of entrance ways.
6: Surface material of entrance ways is not provided comfortable and safe use.

PEDESTRIAN ROUTES

7


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7-8: Parked vehicles on the sidewalks oblique people with hand and arm deficiencies to walk in the traffic zone.
9: Steeped sidewalks are dangerous.
10: Crowded pavements limited movement of people with hand and arm deficiencies.
11-12: Improperly designed pedestrian crossings are not safe and comfortable enough.

OPEN SPACE FACILITIES AND SERVICES

13


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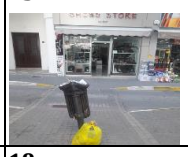

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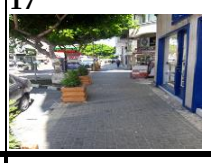

18


13-14: Underground toilets are inaccessible for people with hand and arm deficiencies.
15: Street furnishing elements that were placed at the middle of pedestrian crossings, are troublesome.
16: Drop-off zone without curb ramps are inaccessible and dangerous.
17-18: The number of street furnishing elements are not enough..

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19


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24


19-20-21: Private sectors actions were not sufficiently controlled.
22: Local authority was not controlled parking facilities.
23-24: Poor maintenance of pedestrian crossings creates risks for hazards.

SOCIO-CULTURAL FEATURES

25


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25-26: Parked vehicles occupied pedestrian pavements.
27-28: Disability designated facilities are occupied by able-bodied vehicle users.
29-30: Shop owners placed stalls at the entrance way.

SOCIO-ECONOMIC FEATURES

31


32


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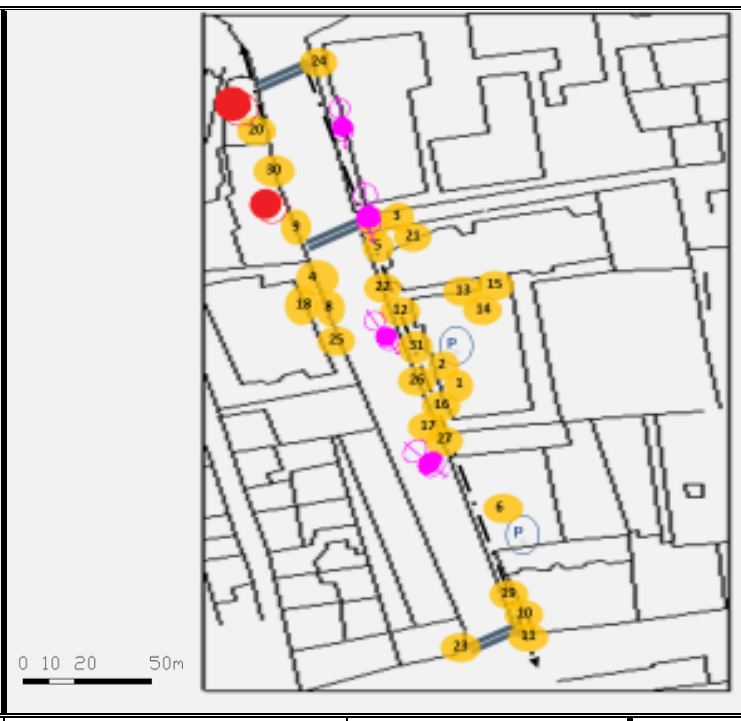
31-32: Unaffordable public facilities for unskilled disabled person.
33: There is not bus stops, taxi prices are too high.
34: Public toilet facilities have to be charged.
35-36: Selling products are too expensive .

SD3-ATATÜRK STREET
PREGNANT WOMEN

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- Pregnant woman is walking together with someone
- Pregnant women is standing

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1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1-2: Level differences at the entranceways is dangerous.
3: Entrance way has ramp, but it is blocked by shop stalls.
4: Electricity office entranceway has not ramps and handrails.
5: Souvenir shop stalls restrict usage of entrance ways.
6: Surface material of entrance ways is not provided comfortable and safe for pregnant women.

PEDESTRIAN ROUTES

7


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7-8: Parked vehicles on the sidewalks oblique pregnant women to use traffic zone.
9: Steeped sidewalks are dangerous for pregnant women.
10: Crowded pavements limited movement of pregnant women.
11-12: Improperly designed pedestrian crossings are not safe and comfortable enough.

OPEN SPACE FACILITIES AND SERVICES

13


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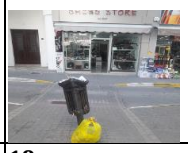

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13-14: Underground toilets are dangerous and they are not provided comfortable use.
15: Street furnishing elements that were placed at the middle of pedestrian crossings, are troublesome.
16: Drop-off zone without curb ramps are inaccessible and dangerous.
17-18: The number of street furnishing elements are not enough.

SOCIAL ENVIRONMENTAL QUALITY

SOSCIO-POLITIC FEATURES

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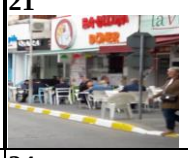

22


23


24


19-20-21: Private sectors actions were not sufficiently controlled.
22: Local authority was not controlled parking facilities.
23-24: Poor maintenance of pedestrian crossings creates risks for hazards.

SOCIO-CULTURAL FEATURES

25


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25-26: Parked vehicles occupied pedestrian pavements.
27-28: Impolite behaviours of vehicle drivers are troublesome.
29-30: Shop owners placed stalls at the entrance way.

SOCIO-ECONOMIC FEATURES

31


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35


36


31-32: Menu prices are too expensive.
33: There is not bus stops, taxi prices are too high.
34: Public toilet facilities have to be charged.
35-36: Selling products are too expensive .

SD3-ATATÜRK STREET
PEOPLE WITH PUSHCHAIRS

NORTH

LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- Pushchair user women are walking
- Pushchair user parent is walking
- Pushchair user women is stopping and talking

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

2

3

4


5


6


1-2: Narrow thresholds and entrance ways are not available for parents with pushchairs.
3: Entrance way has ramp, but it is blocked by shop stalls.
4: Electricity office entranceway has not ramps and handrails.
5: Souvenir shop stalls restrict usage of entrance ways.
6: Surface material of entrance ways is not provided comfortable and safe use for parents with pushchairs.

PEDESTRIAN ROUTES

7


8


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10


11


12


7-8: Parked vehicles on the sidewalks oblique parents with pushchairs to walk in the traffic zone.
9: Steeped sidewalks are unavailable for parents with pushchairs.
10: Crowded pavements limited movement of people with pushchairs.
11-12: Improperly designed pedestrian crossings are not safe and comfortable enough.

OPEN SPACE FACILITIES AND SERVICES

13


14


15


16


17


18


13-14: Underground toilets are inaccessible for people with pushchairs.
15: Street furnishing elements that were placed at the middle of pedestrian crossings, are troublesome.
16: Drop-off zone without curb ramps are inaccessible and dangerous.
17-18: The number of street furnishing elements are not enough.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19


20


21


22


23


24


19-20-21: Private sectors actions were not sufficiently controlled.
22: Local authority was not controlled parking facilities.
23-24: Poor maintenance of pedestrian crossings creates risks for hazards.

SOCIO-CULTURAL FEATURES

25


26


27


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25-26: Parked vehicles occupied pedestrian pavements.
27-28: Disability designated facilities are occupied by able-bodied vehicle users.
29-30: Shop owners placed stalls at the entrance way.

SOCIO-ECONOMIC FEATURES

31


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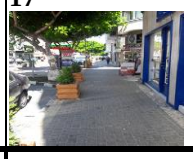
31-32: Unaffordable public facilities for unskilled disabled person.
33: There is not bus stops, taxi prices are too high.
34: Public toilet facilities have to be charged.
35-36: Selling products are too expensive .

SD3-ATATÜRK STREET
PEOPLE WITH HEAVY LUGGAGE/LOAD

NORTH

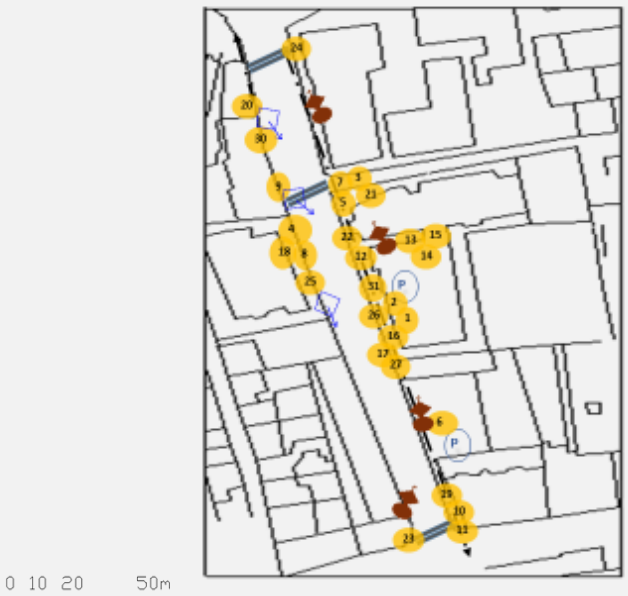
LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- People with heavy luggage are walking together
- People with heavy luggage is walking

PHYSICAL ENVIRONMENT QUALITY	BUILDING ENTRANCES AND ENVIRONS	1 	2 	3 	1-2: Slippery surface material of entrance ways creates danger for people with heavy luggage. 3: Entrance ramp end with step and blocked by shop stalls. 4: Electricity office entrance have steps without handrails. 5: Souvenir shop stalls limit people with heavy luggage. 6: Narrow thresholds along congested narrow pavements creates difficulties for people with heavy luggage.
		4 	5 	6 	
	PEDESTRIAN ROUTES	7 	8 	9 	7: Placement of street furnishing elements obstacle people with heavy luggages. 8: People with heavy luggages are walking in the traffic zone because of the parked vehicles on the pavement 9: Garbage bins create an obstacle at the intersection of curb ramp. 10: Crowded pavements limited movement of people with heavy luggage. 11: Improperly designed pedestrian crossings is not safe and comfortable enough.
		10 	11 	12 	
	OPEN SPACE FACILITIES AND SERVICES	13 	14 	15 	13-14: Underground toilets are not provided safe and comfortable use. 15: Street furnishing elements that were placed at the middle of pedestrian crossings, impede people with heavy luggage. 16: Drop-off zone facilities are not safe. 17-18: The number of street furnishing elements are not enough.
		16 	17 	18 	
SOCIAL ENVIRONMENTAL QUALITY	SOCIO-POLITIC FEATURES	19 	20 	21 	19-20-21: Private sectors actions were not sufficiently controlled. 22: Local authority was not controlled parking facilities. 23-24: Poor maintenance of pedestrian crossings creates risks for hazards.
		22 	23 	24 	
	SOCIO-CULTURAL FEATURES	25 	26 	27 	25-26: Parked vehicles occupied pedestrian pavements. 27-28: Impolite behaviour of vehicle drivers are troublesome. 29-30: Shop owners placed stalls at the entrance way
		28 	29 	30 	
	SOCIO-ECONOMIC FEATURES	31 	32 	33 	31-32: Selling products are too expensive. 33: There is not bus stops, taxi prices are too high. 34: Public toilet facilities have to be charged. 35-36: Selling products are too expensive for local wheelchair user people.
		34 	35 	36 	

SD3-ATATÜRK STREET
ELDERLY PEOPLE

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- Elderly people is walking together
- Elderly man is walking alone

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1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1-2: Slippery floor covering is dangerous for the elderly people.
3: Entrance way has ramp, but it was blocked by shop stalls.
4: Electricity office entrance have steps without ramps
5: Souvenir shop stalls restrict usage of entrance ways.
6: Surface material of entrance ways is not provided comfortable and safe use for the elderly people.

PEDESTRIAN ROUTES

7


8


9


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12

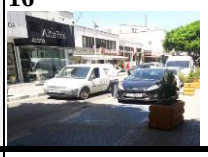

7-8: Elderly people was walking in the traffic zone, because of the parked vehicles on the pedestrian way.
9: Garbage bın creates an obstacle at the ıntersectıon of curb ramp
10: Crowded pavements limited movement of the elderly people.
11: Improperly designed pedestrian crossings are not safe and comfortable enough.

OPEN SPACE FACILITIES AND SERVICES

13


14


15


16


17


18


13-14: Underground toilets are not provided safe and comfortable use for the elderly people.
15: Street furnishing elements that were placed at the middle of pedestrian crossings, are troublesome for elderly users.
16: Unsuitable drop-off zone is dangerous for the elderly people.
17-18: The number of street furnishing elements are not enough..

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19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21


22


23


24


19-20-21: Private sectors actions were not sufficiently controlled.
22: Local authority was not controlled parking facilities.
23-24: Poor maintenance of pedestrian crossings creates risks for hazards.

SOCIO-CULTURAL FEATURES

25


26


27


28


29


30


25-26: Parked vehicles occupied pedestrian pavements.
27-28: Impolite behaviours of vehicle drivers are troublesome for the elderly pedestrian users.
29-30: Shop owners placed stalls at the entrance way

SOCIO-ECONOMIC FEATURES

31


32


33


34

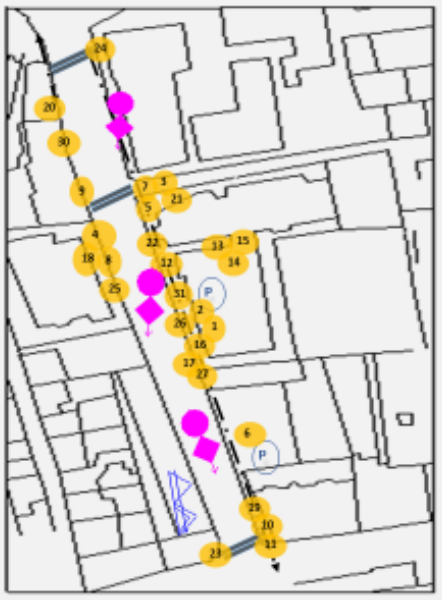

35


36


31-32: Unaffordable public facilities for unskilled elderly people.
33: There is not bus stops, taxi prices are too high.
34: Public toilet facilities have to be charged.
35-36: Selling products are too expensive .

SD3-ATATÜRK STREET
CHILDREN UNDER SEVEN YEARS OLD

NORTH



0 10 20 50m

LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- A girl is walking with her parents
- A boy is sitting with his parents

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

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3

4

5

6

1-2: Slippery floor covering is dangerous for children.
3: Entrance way has ramp, but it was blocked by shop stalls.
4: Electricity office entrance way has not handrails.
5: Souvenir shop stalls restrict usage of entrance ways.
6: Surface material of entrance ways is not provided comfortable and safe use for the children.

PEDESTRIAN ROUTES

7

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12

7-8: Children was walking in the traffic zone, because of the parked vehicles on the pedestrian way.
9: Garbage bin creates an obstacle at the intersection of curb ramp.
10: Crowded pavements limited movement of the children.
11: Improperly designed pedestrian crossings are not safe and comfortable enough.

OPEN SPACE FACILITIES AND SERVICES

13

14

15

16

17

18

13-14: Underground toilets are not provided safe and comfortable use for children.
15: Street furnishing elements that were placed at the middle of pedestrian crossings, are troublesome for children.
16: Unsuitable drop-off zone is dangerous for the children.
17-18: The number of street furnishing elements are not enough.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

20

21

22

23

24

19-20-21: Private sectors actions were not sufficiently controlled.
22: Local authority was not controlled parking facilities.
23-24: Poor maintenance of pedestrian crossings creates risks for hazards.

SOCIO-CULTURAL FEATURES

25

26

27

28

29

30

25-26: Parked vehicles occupied pedestrian pavements.
27-28: Impolite behaviours of vehicle drivers are troublesome for children.
29-30: Shop owners placed stalls at the entrance way

SOCIO-ECONOMIC FEATURES

31

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33

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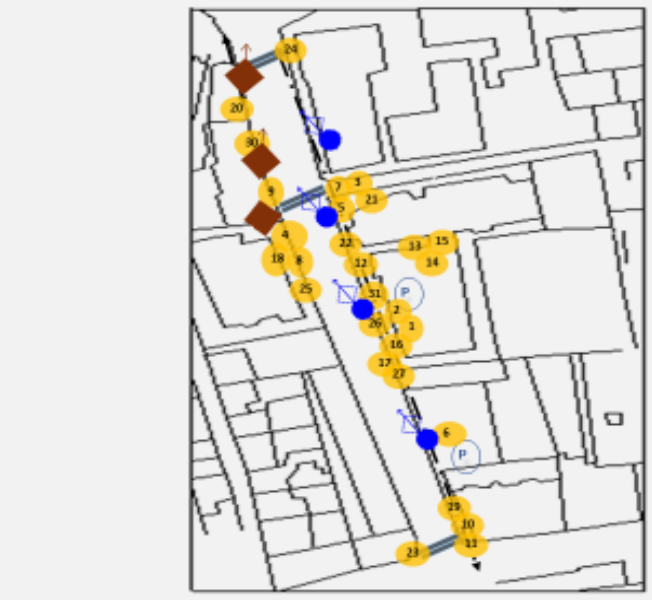
36

31-32: Menu prices are too high for children and their parents.
33: There is not bus stops, taxi prices are too high.
34: Public toilet facilities have to be charged.
35-36: Selling products are too expensive .

SD3-ATATÜRK STREET
PEOPLE WITH OTHER IMPAIRMENTS

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- A woman with other impairments is walking
- A woman with other impairment is standing
- A man with other impairment is walking together

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1


2


3


4


5


6


1-2: Level differences at the entranceways is dangerous and narrow thresholds are not accessible for people with other impairments.
3: Entrance way has ramp, but it is blocked by shop stalls.
4: Electricity office entranceway has not ramps and handrails.
5: Souvenir shop stalls restrict usage of entrance ways.
6: Surface material of entrance ways is not provided comfortable and safe.

PEDESTRIAN ROUTES

7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11


12


7-8: Parked vehicles on the sidewalks oblique people with other impairments to use traffic zone.
9: Steeped sidewalks are dangerous.
10: Crowded pavements limited movement of people with other impairments.
11-12: Improperly designed pedestrian crossings are not safe and comfortable enough.

OPEN SPACE FACILITIES AND SERVICES

13


14


15


16


17


18


13-14: Underground toilets are dangerous and they are not provided comfortable use.
15: Street furnishing elements that were placed at the middle of pedestrian crossings, are troublesome.
16: Drop-off zone without curb ramps are inaccessible and dangerous.
17-18: The number of street furnishing elements are not enough.

SOCIAL ENVIRONMENTAL QUALITY

SOSCIO-POLITIC FEATURES

19


20


21


22


23


24


19-20-21: Private sectors actions were not sufficiently controlled.
22: Local authority was not controlled parking facilities.
23-24: Poor maintenance of pedestrian crossings creates risks for hazards.

SOCIO-CULTURAL FEATURES

25


26


27


28


29


30


25-26: Parked vehicles occupied pedestrian pavements.
27-28: Impolite behaviours of vehicle drivers are troublesome.
29-30: Shop owners placed stalls at the entrance way.

SOCIO-ECONOMIC FEATURES

31


32


33


34

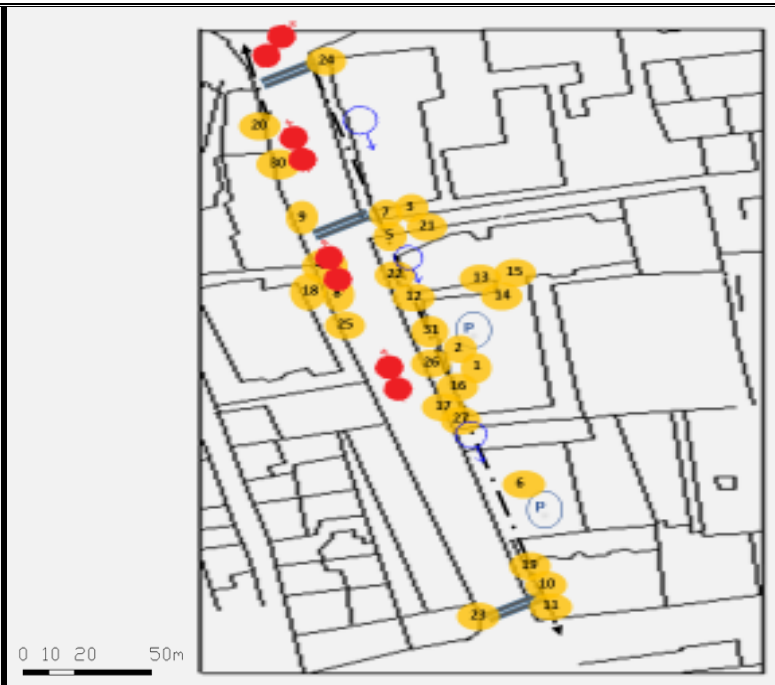

35


36


31-32: Menu prices are too expensive.
33: There is not bus stops, taxi prices are too high.
34: Public toilet facilities have to be charged.
35-36: Selling products are too expensive .

SD3-ATATÜRK STREET
ABLE-BODIED PEOPLE

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- Able-bodied woman is walking together
- Able-bodied man is walking alone

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1


2


3


4


5


6


1-2: Slippery floor covering is dangerous able-bodied people.
3: Entrance way has ramp, but it was blocked by shop stalls.
4: Electricity office entrance have not handrails.
5: Souvenir shop stalls restrict usage of entrance ways.
6: Surface material of entrance ways is not provided comfortable and safe use.

PEDESTRIAN ROUTES

7


8


9


10


11


12


7-8: Able-bodied people was walking in the traffic zone, because of the parked vehicles on the pedestrian way.
9: Garbage bın creates an obstacle at the ıntersectıon of curb ramp
10: Crowded pavements limited movement of the able-bodied people.
11: Improperly designed pedestrian crossings are not safe and comfortable enough.

OPEN SPACE FACILITIES AND SERVICES

13


14


15


16


17


18


13-14: Underground toilets are not provided comfortable use and the number of facilities are not sufficient.
15: Street furnishing elements that were placed at the middle of pedestrian crossings, are troublesome.
16: Unsuitable drop-off zone is dangerous.
17-18: The number of street furnishing elements are not enough.

SOCIO-POLITIC FEATURES

19


20


21


22


23


24


19-20-21: Private sectors actions were not sufficiently controlled.
22: Local authority was not controlled parking facilities.
23-24: Poor maintenance of pedestrian crossings creates risks for hazards.

SOCIO-CULTURAL FEATURES

25


26


27


28


29


30


25-26: Parked vehicles occupied pedestrian pavements.
27-28: Impolite behaviours of vehicle drivers are troublesome for the pedestrians.
29-30: Shop owners placed stalls at the entrance way

SOCIO-ECONOMIC FEATURES

31


32


33


34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36


31-32: Menu prices are too high.
33: There is not bus stops, taxi prices are too high.
34: Public toilet facilities have to be charged.
35-36: Selling products are too expensive .

SD4-ATATURK SQUARE &ITS NEAR VICINITY WHEELCHAIR/SCOOTER USER

LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- A wheelchair user is walking together with someone
- A wheelchair user man is walking

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

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6

1: Width of the ramps is not suitable for wheelchair users.
2-3: Narrow tresholds is not available for people with wheelchairs.
4-5: Surface material of entranceways is not suitable for wheelchair people.
6: Entrance ways are blocked by shop stalls.

PEDESTRIAN ROUTES

7

8

9

10

11

12

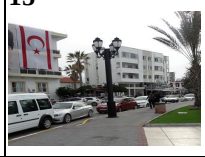
7: Improperly designed curb ramp limited accessibility.
8: Street furnishing elements impede people with wheelcahirs.
9: Joints between surface materials create risks for hazards.
10: Bollards were randomly placed without considering accessibility.
11-12: Level differences between the platforms are not suitable for wheelchair users .

OPEN SPACE FACILITIES AND SERVICES

13

14

15



16

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18

13: The height of ATMs is not suitable for people with wheelchairs.
14: Placement of safety bollards create risks for hazards.
15-16: Location of street furnishing elements impede wheelchair users.
17-18: There is not any bus stop, only taxi stop is located at the square.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

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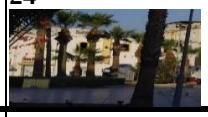

19-20: Insufficient traffic controlling attempts restrict usage of the urban square.
21-22-23: Poor maintenance of pedestrian routes creates rısks for hazards.
24: Poor maintenance of landscaping causes safety problems.

SOCIO-CULTURAL FEATURES

25

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25-26-27-28: Curb ramps at pedestrian crossings are blocked by parked vehicles.
29-30: Sidewalks occupied by parked vehicles restrict usage of people with wheelchairs.

SOCIO-ECONOMIC FEATURES

31

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33

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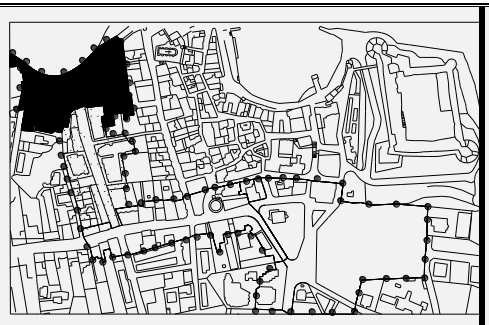
35

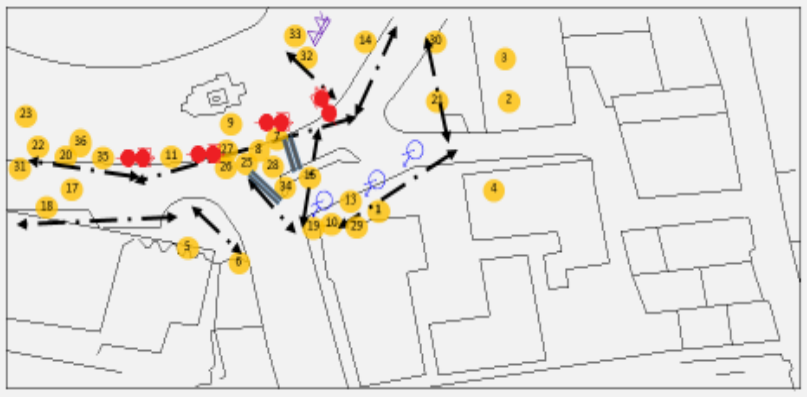
36

31: Tourist-oriented prices are very expensive.
32-33: Both tourist and local people with wheelchairs were observed in the SD4.
34-35-36: There is a taxi stop, but prices are too expensive.

SD4-ATATURK SQUARE &ITS NEAR VICINITY
PEOPLE WITH WALKING DEFICIENCIES



NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- People with walking frame is walking together with someone
- People with walking sticks is walking
- People with walking sticks is sitting together with someone.

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

2

3

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6


1: Slippery surface material at the entrance way is hazardous.
2-3: Level difference at the entranceway is not provided safe and comfortable use.
4-5: Granite surfaces of entrance ways create risks for hazards.
6: Entrance ways are blocked by shop stalls.

PEDESTRIAN ROUTES

7


8


9


10

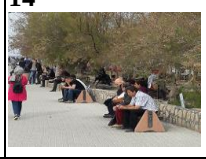

11


12


7: Improperly designed curb ramp limited accessibility.
8: Street furnishing elements impede people with walking deficiencies.
9: Surface materials is not slip-resistant.
10: Bollards were randomly placed without considering accessibility.
11-12: Joints between the floor coverings cause safety problems.

OPEN SPACE FACILITIES AND SERVICES

13


14


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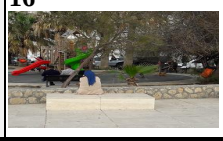
16


17


18


13: The number of ATMs are not sufficient.
14-15-16: Sitting elements are not provided safe and comfortable use.
17-18: There is not any bus stop, only taxi stop is located at the square.

SOCIO-POLITIC FEATURES

19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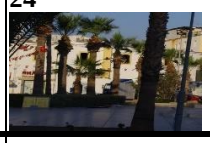
24


19-20: Insufficient traffic controlling attempts restrict usage of the urban square.
21-22-23: Poor maintenance of pedestrian routes creates risks for hazards.
24: Poor maintenance of landscaping causes safety problems.

SOCIO-CULTURAL FEATURES

25


26


27

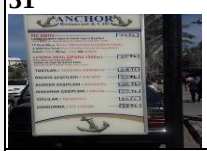

28


29


30


25-26-27-28: Curb ramps at pedestrian crossings are blocked by parked vehicles.
29-30: Sidewalks occupied by parked vehicles obstacle people with walking deficiencies.

SOCIO-ECONOMIC FEATURES

31


32


33


34


35

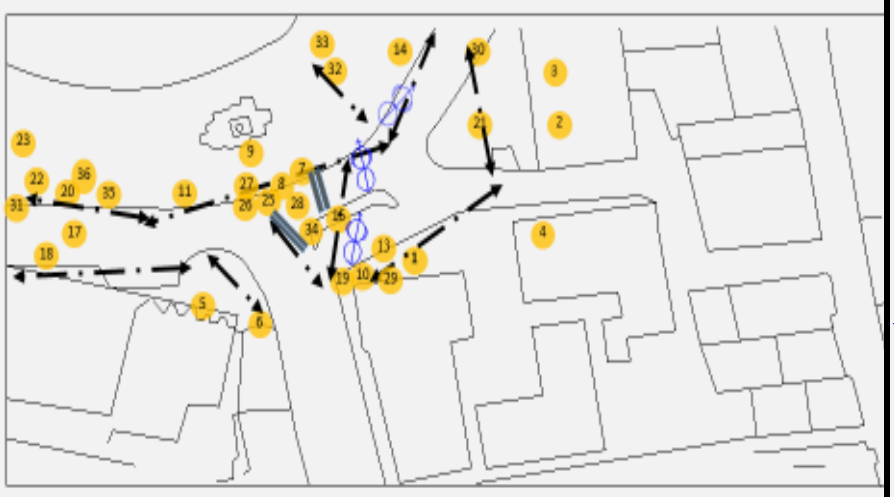

36


31: Tourist-oriented prices are very expensive.
32-33: Both of tourists and local people were observed with walking devices.
34-35-36: There is a taxi stop, but prices are too expensive.

SOCIAL ENVIRONMENTAL QUALITY

SD4-ATATÜRK SQUARE &ITS NEAR VICINITY
PEOPLE WITH HAND AND ARM DEFICIENCIES

NORTH

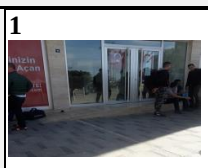


LEGEND:

- Pedestrian movement
- Pedestrian crossıng
- P — Car parking
- Observed problems on inclusive access
- People with hand and arm deficiency is walking together

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1 
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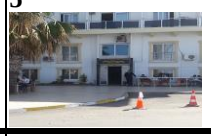
5 
6 

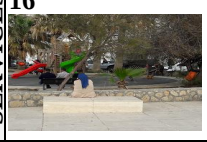
1: Door openings are not suitable for people with hand and arm deficiencies.
2-3: Level difference at the entranceway is not provided safe and comfortable use.
4-5: Granite surfaces entrance ways create risks for hazards.
6: Entrance ways are blocked by shop stalls.

PEDESTRIAN ROUTES

7 
8 
9 
10 
11 
12 

7: Improperly designed curb ramp is limited accessibility.
8: Street furnishing elements are obstacle people with hand and arm deficiencies.
9: Surface materials is not slip-resistant.
10: Bollards were randomly placed without considering accessibility.
11-12: Joints between the floor coverings are troublesome and may causes hazards.

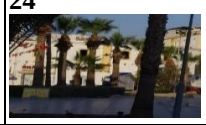
OPEN SPACE FACILITIES AND SERVICES

13 
14 
15 
16 
17 
18 

13: ATMs are not suitable for the use of people with hand and arm deficiencies.
14-15-16: Folding chairs are not appropriate for people with hand and arm deficiencies.
17-18: There is not any bus stop, only taxi stop is located at the square.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19 
20 
21 
22 
23 
24 

19-20: Insufficient traffic controlling attempts restrict usage of the urban square.
21-22-23: Poor maintenance of pedestrian routes creates risks for hazards.
24: Poor maintenance of landscaping causes safety problems.

SOCIO-CULTURAL FEATURES

25 
26 
27 
28 
29 

30 

25-26-27-28: Curb ramps at pedestrian crossings are blocked by parked vehicles.
29-30: Sidewalks occupied by parked vehicles oblique people to walk in the traffic zone.

SOCIO-ECONOMIC FEATURES

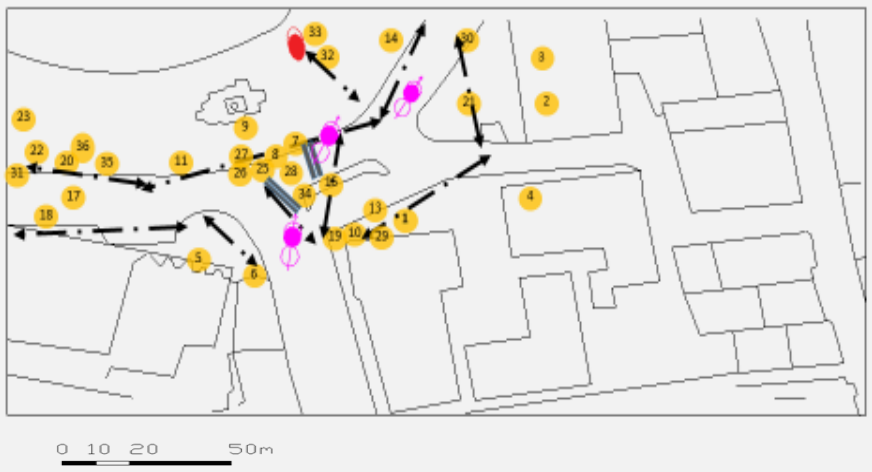
31 

32 
33 
34 
35 
36 

31-33: Tourist-oriented prices are very expensive.
34-35-36: There is a taxi stop, but prices are too expensive.

SD4-ATATURK SQUARE &ITS NEAR VICINITY PREGNANT WOMEN

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossıng
- Car parking
- Observed problems on inclusive access
- Pregnant woman is walking
- Pregnant woman is standing

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

2

3

4

5

6

1: Slippery surface material at the entrance way is hazardous.
2-3: Level difference at the entranceway is not provided safe and comfortable use.
4-5: Granite surfaces entrance ways creates risks for hazards.
6: Entrance ways are blocked by shop stalls.

PEDESTRIAN ROUTES

7

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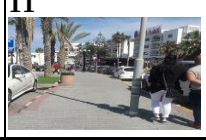

12

7: Improperly designed curb ramp is limited accessibility.
8: Street furnishing elements are obstacle pregnant women.
9: Surface materials is not slip-resistant.
10: Bollards were randomly placed without considering accessibility.
11-12: Joints between the floor coverings are troublesome and may causes hazards.

OPEN SPACE FACILITIES AND SERVICES

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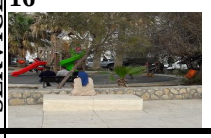

17

18

13: The number of ATMs are not sufficient.
14-15-16: Sitting elements are not provided comfortable use.
17-18: There is not any bus stop, only taxi stop is located at the square.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

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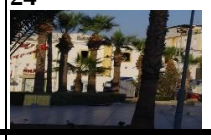

19-20: Insufficient traffic controlling attempts restrict usage of the urban square.
21-22-23: Poor maıntenance of pedestrıan routes creates rısks for hazards.
24: Poor maintenance of landscaping causes safety problems.

SOCIO-CULTURAL FEATURES

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25-26-27-28: Curb ramps at pedestrian crossings are blocked by parked vehicles.
29-30: Sidewalks occupied by parked vehicles oblique pregnant woman to walk in the traffic zone.

SOCIO-ECONOMIC FEATURES

31

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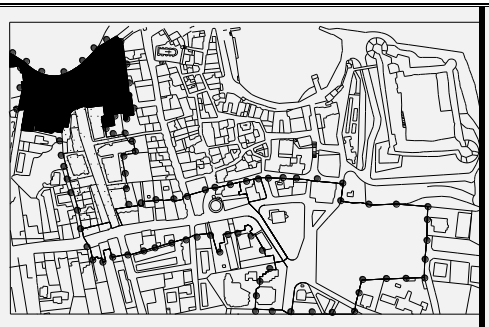
31: Tourist-oriented prices are very expensive.
32-33: Pregnant woman who uses SD4 has mainly middle-income level.
34-35-36: There is a taxi stop, but prices are too expensive.

SD4-ATATURK SQUARE &ITS NEAR VICINITY
PARENTS WITH PUSHCHAIR



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- Female users with pushchairs are walking
- Female user with pushchair is walking

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

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6

1: Ramp width at the entrance way is not appropriate for parents with pushchairs.
2-3: Narrow thresholds are not suitable for pushchair users.
4-5: Surface material is not providing comfortable use.
6: Entrance ways are blocked by shop stalls.

PEDESTRIAN ROUTES

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7: Improperly designed curb ramp is limited accessibility.
8: Street furnishing elements are obstacle parents with pushchairs.
9: Surface materials are not provided comfortable use.
10: Bollards were randomly placed without considering accessibility.
11-12: Joints between the floor coverings are troublesome for parents with pushchairs.

OPEN SPACE FACILITIES AND SERVICES

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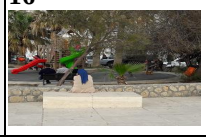

17

18

13: The number of ATMs are not sufficient.
14-15-16: Sitting elements are not provided safe and comfortable use.
17-18: There is not any bus stop, only taxi stop is located at the square.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

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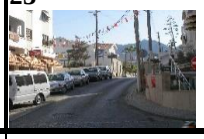
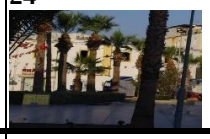


24



19-20: Insufficient traffic controlling attempts restrict usage of the urban square.
21-22-23: Poor maintenance of pedestrian routes creates risks for hazards.
24: Poor maintenance of landscaping causes safety problems.

SOCIO-CULTURAL FEATURES

25

26

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25-26-27-28: Curb ramps at pedestrian crossings are blocked by parked vehicles.
29-30: Sidewalks occupied by parked vehicles are troublesome for parents with pushchairs.

SOCIO-ECONOMIC FEATURES

31

32

33

34

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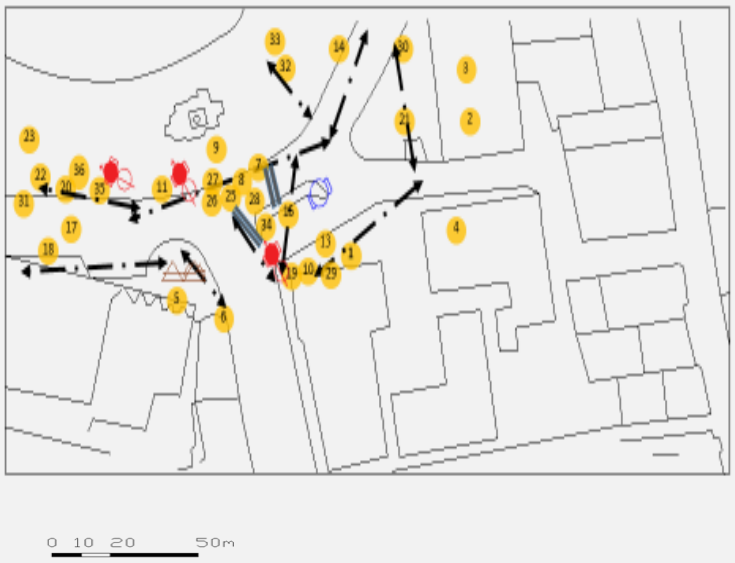
36

31: Tourist-oriented prices are very expensive.
32-33: Parents with middle-income level were mainly observed.
34-35-36: There is a taxi stop, but prices are too expensive.

SD4-ATATURK SQUARE &ITS NEAR VICINITY
PEOPLE WITH HEAVY LUGGAGE/LOAD



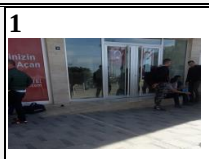
LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- People with a heavy luggage are walking
- A man with a heavy luggage is standing
- People with a heavy luggage are sitting

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1



2

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6

1: Slippery surface material at the entrance way is hazardous.
2-3: Level difference at the entranceway is not provided safe and comfortable use.
4-5: Granite surfaces of entrance ways create risks for hazards.
6: Entrance ways are blocked by shop stalls.

PEDESTRIAN ROUTES

7

8

9

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12

7: Improperly designed curb ramp limited accessibility.
8: Street furnishing elements impede people with heavy luggage.
9: Surface materials are not slip-resistant.
10: Bollards were randomly placed without considering accessibility.
11-12: Joints between the floor coverings are troublesome for people with heavy loads.

OPEN SPACE FACILITIES AND SERVICES

13

14

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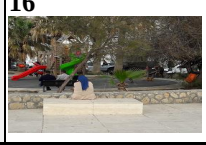
16



17

18

13: The number of ATMs are not sufficient.
14-15-16: Sitting elements are not provided comfortable use.
17-18: There is not any bus stop, only taxi stop is located at the square.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

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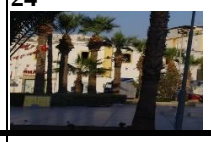


19-20: Insufficient traffic controlling attempts restrict usage of the urban square.
21-22-23: Poor maintenance of pedestrian routes create risks for hazards.
24: Poor maintenance of landscaping causes safety problems.

SOCIO-CULTURAL FEATURES

25

26

27

28

29

30

25-26-27-28: Curb ramps at pedestrian crossings are blocked by parked vehicles.
29-30: Sidewalks occupied by parked vehicles restrict usage of people with heavy loads.

SOCIO-ECONOMIC FEATURES

31

32

33

34

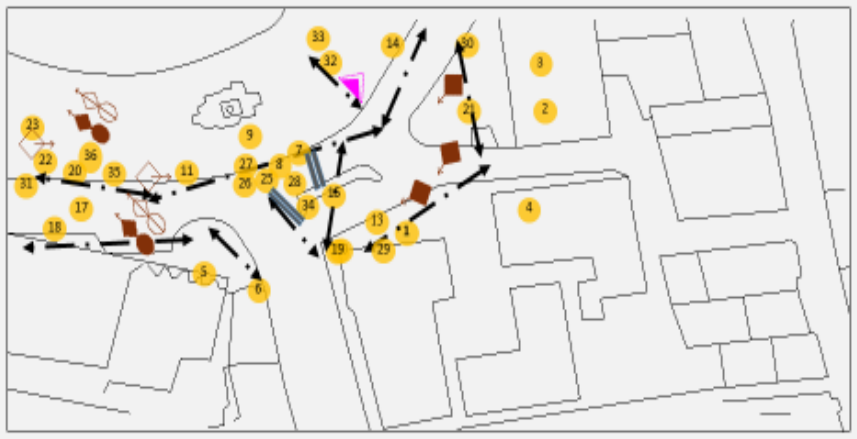
35

36

31-33: Tourist-oriented prices are very expensive.
34-35-36: There is a taxi stop, but prices are too expensive.

SD4-ATATURK SQUARE &ITS NEAR VICINITY ELDERLY PEOPLE

NORTH

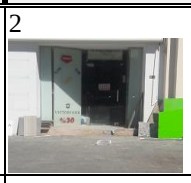


LEGEND:

- Pedestrian movement
- Pedestrian crossıng
- Car parking
- Observed problems on inclusive access
- Elderly man is walking
- Elderly woman is walking
- Elderly woman is sitting alone.
- Elderly group is walking together.

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS



1: Slippery surface material at the entrance way is hazardous.
2-3: Level difference at the entranceway is not provided safe and comfortable use.
4-5: Granite surfaces entrance ways creates risks for hazards.
6: Entrance ways are blocked by shop stalls.

PEDESTRIAN ROUTES






7: Improperly designed curb ramp is limited accessibility.
8: Street furnishing elements are obstacle elderly people.
9: Surface materials is not slip-resistant.
10: Bollards were randomly placed without considering accessibility.
11-12: Joints between the floor coverings are troublesome for elderly people.

OPEN SPACE FACILITIES AND SERVICES





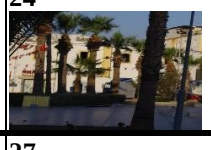

13: The number of ATMs are not sufficient.
14-15-16: Sitting elements are not provided safe and comfortable use.
17-18: There is not any bus stop, only taxi stop is located at the square.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES





19-20: Insufficient traffic controlling attempts restrict usage of the urban square.
21-22-23: Poor maintenance of pedestrian routes creates risks for hazards.
24: Poor maintenance of landscaping causes safety problems.

SOCIO-CULTURAL FEATURES






25-28: Curb ramps at pedestrian crossings are blocked by parked vehicles.
29-30: Sidewalks occupied by parked vehicles restrict usage of elderly people.

SOCIO-ECONOMIC FEATURES

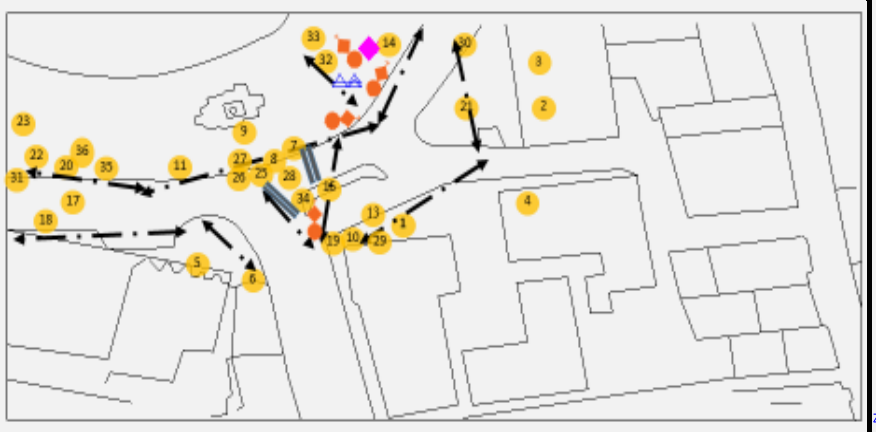





31: Tourist-oriented prices are very expensive.
32-33: Elderly tourists was observed in the SD4.
34-35-36: There is a taxi stop, but prices are too expensive.

SD4-ATATÜRK SQUARE &ITS NEAR VICINITY
CHILDREN UNDER SEVEN YEARS OLD

NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- A girl is walking with her family
- A boy is sitting with his family
- A girl standing and talking

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

2

3

4


5


6


1: Ramp at the entrance way has not handrail.
2-3: Level difference at the entranceway is not provided safe and comfortable use.
4-5: Granite surfaces entrance ways create risks for hazards.
6: Entrance ways are blocked by shop stalls.

PEDESTRIAN ROUTES

7


8


9


10


11


12


7: Improperly designed curb ramp is limited accessibility.
8: Street furnishing elements causes safety problems for children.
9: Surface materials is not slip-resistant.
10: Bollards were randomly placed without considering accessibility.
11-12: Joints between the floor coverings are troublesome and may causes hazards.

OPEN SPACE FACILITIES AND SERVICES

13


14


15


16


17


18


13: There is not accessible playing equipment for disabled children.
14-16: Sitting elements are not provided comfortable use.
17-18: There is not any bus stop, only taxi stop is located at the square.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19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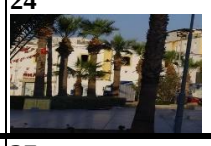

19-20: Insufficient traffic controlling attempts restrict usage of the urban square.
21-22-23: Poor maıntenance of pedestrian routes creates risks for hazards.
24: Poor maintenance of landscaping causes safety problems.

SOCIO-CULTURAL FEATURES

25


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25-28: Curb ramps at pedestrian crossings are blocked by parked vehicles.
29-30: Sidewalks occupied by parked vehicles oblique children to walk in the traffic zone.

SOCIO-ECONOMIC FEATURES

31


32


33


34


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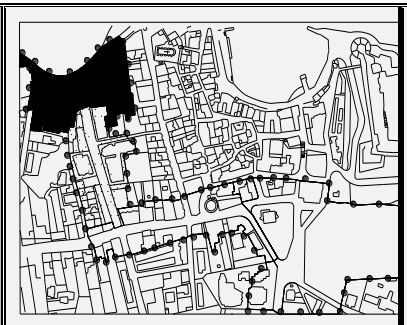
36


31: Tourist-oriented prices are very expensive.
32-33: Children and their families were not observed while purchasing for anything.
34-35-36: There is a taxi stop, but prices are too expensive.

SD4-ATATURK SQUARE &ITS NEAR VICINITY
PEOPLE WITH OTHER IMPAIRMENTS



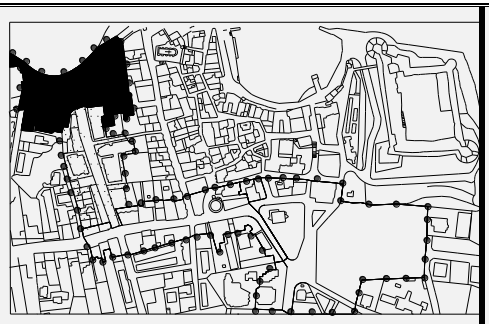
NORTH

LEGEND:

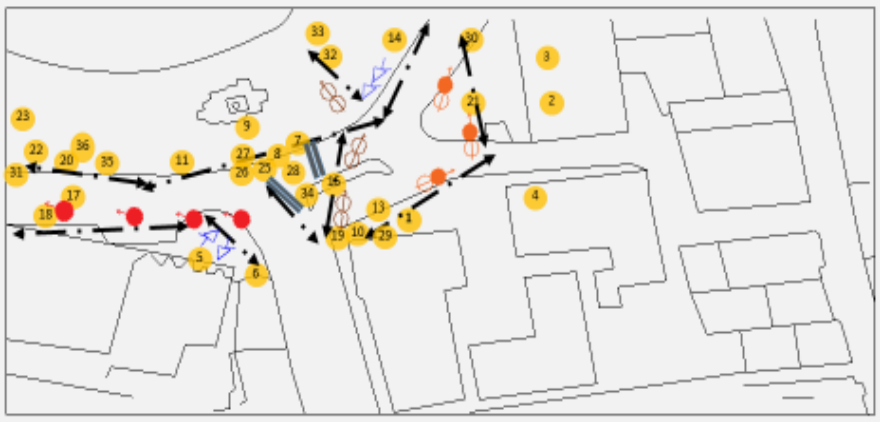
- Pedestrian movement
- Pedestrian crossing
- Car parking
- Observed problems on inclusive access
- People with other impairment is walking
- People with other impairment is walking
- People with other impairment is standing and talking

PHYSICAL ENVIRONMENTAL QUALITY	BUILDING ENTRANCES AND ENVIRONS	1 	2 	3 	1: The slippery surfaces is dangerous. 2-3: Narrow thresholds and door openings is not suitable. 4-5: Level differences at the entranceways are not suitable. 6: Entrance ways are blocked by shop stalls.
		4 	5 	6 	
	PEDESTRIAN ROUTES	7 	8 	9 	7: Improperly designed curb ramp is limited accessibility. 8: Street furnishing elements are obstacle people with other impairments. 9: Joints between surface materials creates risks for hazards. 10: Bollards were randomly placed without considering accessibility. 11-12: Level differences between the platforms are not suitable for people with other impairments.
		10 	11 	12 	
	OPEN SPACE FACILITIES AND SERVICES	13 	14 	15 	13: The height of ATMs is not suitable for very short person. 14: Placement of safety bollards creates risks for hazards. 15-16: Location of street furnishing elements impede people with other impairments. 17-18: There is not any bus stop, only taxi stop is located at the square.
		16 	17 	18 	
SOCIAL ENVIRONMENTAL QUALITY	SOCIO-POLITIC FEATURES	19 	20 	21 	19-20: Insufficient traffic controlling attempts restrict usage of the urban square. 21-22-23: Poor maintenance of pedestrian routes creates risks for hazards. 24: Poor maintenance of landscaping causes safety problems.
		22 	23 	24 	
	SOCIO-CULTURAL FEATURES	25 	26 	27 	25-28: Curb ramps at pedestrian crossings are blocked by parked vehicles. 29-30: Sidewalks occupied by parked vehicles restrict usage of people with other impairments.
		28 	29 	30 	
	SOCIO-ECONOMIC FEATURES	31 	32 	33 	31: Tourist-oriented prices are very expensive. 32-33: Both tourist and local people with some impairments were observed in the SD4. 34-35-36: There is a taxi stop, but prices are too expensive.
		34 	35 	36 	

SD4-ATATURK SQUARE &ITS NEAR VICINITY
ABLE-BODIED PEOPLE



NORTH



LEGEND:

- Pedestrian movement
- Pedestrian crossıng
- Car parking
- Observed problems on inclusive access
- Able-bodied man and woman is walking together
- Able-bodied male users are walking together
- Able-bodied male user is walking
- Able-bodied man is sitting and talking

PHYSICAL ENVIRONMENTAL QUALITY

BUILDING ENTRANCES AND ENVIRONS

1

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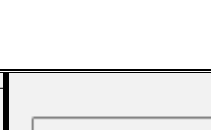

6

1: Slippery surface material at the entrance way is hazardous.
2-3: Level difference at the entranceway is not provided safe and comfortable use.
4-5: Granite surfaces entrance ways creates risks for hazards.
6: Entrance ways are blocked by shop stalls.

PEDESTRIAN ROUTES

7

8

9

10

11

12

7: Improperly designed curb ramp is limited accessibility.
8: Street furnishing elements are obstacle people.
9: Surface materials is not slip-resistant.
10: Bollards were randomly placed without considering accessibility.
11-12: Joints between the floor coverings are not provided comfortable and safe use.

OPEN SPACE FACILITIES AND SERVICES

13

14

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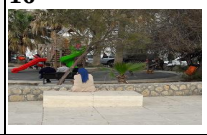
16



17

18

13: The number of ATMs are not sufficient.
14-15-16: Sitting elements are not provided comfortable use.
17-18: There is not any bus stop, only taxi stop is located at the square.

SOCIAL ENVIRONMENTAL QUALITY

SOCIO-POLITIC FEATURES

19

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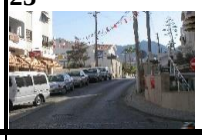
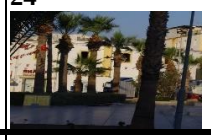


24



19-20: Insufficient traffic controlling attempts restrict usage of the urban square.
21-22-23: Poor maıntenance of pedestrıan routes creates rısks for hazards.
24: Poor maintenance of landscaping causes safety problems.

SOCIO-CULTURAL FEATURES

25

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25-26-27-28: Curb ramps at pedestrian crossings are blocked by parked vehicles.
29-30: Sidewalks occupied by parked vehicles restrict usage of people.

SOCIO-ECONOMIC FEATURES

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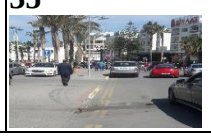

36

31: Tourist-oriented prices are very expensive.
32-33: Both able-bodied tourists and local people were observed.
34-35-36: There is a taxi stop, but prices are too expensive.

Appendix G: A Sample of the Survey

EXPLANATION

Dear Participant;

The questionnaire was prepeared in the purpose of determining inclusiveness of Kyrenia Town Centre for physically disabled users. Questionnaire results, will be not only used for identify Kyrenia Town Centre performance, presents important data for relevant departments which interested with upgrading quality of public realm under the vision of social cohesion and inclusive access. Thanks for your participation.

A-Demographic characteristics

1- Gender:

□ *Female* □ Male

2- Age:

□ 0-7 □ 7-11 □ 11-18 □ 18-45 □46-65 □65+

3- Educational Status:

□Illiterate □ Literate □Primary School □High School □Academy

□ Bachelor □Master □Ph.D. □Special Education

4- Occupation: .....

5-Montly Income:

□ Less than 160 USD □160-350 USD □350-550 USD □550-1000 USD
□More than 1000 USD

6-Which option(s) explain your daily life situation.

□Wheelchair/ Scooter User *
□Walking Impairment (mobility with assistive devices as canes, prosthesis, crutches or someone's help) *
□Hand and Arm Impairment*
□Pregnant women
□Pushchair user
□ Other mobility deficiencies (Explain).....
□ None

*7-If you choose options with symbol (*); which one is the reason?

□Innate □Accident □Illness □Other (explain).....

*8- Which one do you need while going outside during your daily life?

□Accompanied by someone
□Partially accompanied by someone (i.e: moving up-down ladders)

□Substantially acompanied by someone
□None

b-Purpose and frequency of use

1-Which purpose(s) dou you prefer to use Kyrenia Town Centre?

□ Reside □Passing through □Relaxing □Meeting □Working
□Socio-cultural activities □Shopping □Eating □Other (explain).....

2-What is the frequency of Kyrenia Town Centre use?

□Everyday □ Several times in a week □Once a week
□Several times in a month □ Very rarely

3-Which days do you prefer to use Kyrenia Town Centre?

□Weekdays □Weekends □ Both weekdays and weekends

4-Which time periods do you prefer to use Kyrenia Town Centre?

□ Morning (7.00-12.00) □Midday (12.00-14.00) □Afternoon (14.00-17.00)
□Evening (17.00-21.00) □Midnight (21.00-)

5-What is the duration of Kyrenia Town Centre use?

□0-2 hour □ 2-4 hour □4-6 hour □6-10 hour □More than 10 hour

c-Accessibility and movement patterns

1- Which option explains your accessibility to Kyrenia Town Centre?

□Public transportation □ Private vehicle □Walk □Wheelchair (Manuel)
□ Motored heelchair/scooter □Other (explain).....

2-Which option(s) explain your travel mode at Kyrenia Town Centre?

□ Car (driver/passenger) □Cyle □Walk
□Walk with assistant or assitive devices as canes, crutches.i.e.
□Walk with pushchair □Wheelchair (Manual) □Motored wheelchair/scooter □Other
3-Is the public transportation facilities sufficient for access Kyrenia Town Centre?

□Yes □No

4-If no; which factor(s) negatively effects accessibility to Kyrenia Town Centre with public transportation?

□Public transportation vehicles are not sufficient
□Bus stops are not sufficient
□Negative attitudes of other users
□Negative attitudes of bus drivers
□Other (explain).....

d-How is the functional quality of Kyrenia Town Center? Please thick (x) the statements by using following scales: 1-very bad; 2- bad; 3- moderate; 4-good; 5-very good							
Indicators		Provides adaptable use	Ensures safe use	Provides comfortable use	Provides dignity in use	Compatible with usage density	Provide autonomy in use (without someone help)
Entrance ways	A1. Entrance ways width	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	A2. Entrance ways gradient	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	not applicable	1 2 3 4 5
	A3. Entrance ways surface material	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5		1 2 3 4 5
	A4. Ramp location at entrance ways	not applicable			1 2 3 4 5		
Sidewalks		Provides adaptable use	Ensures safe use	Provides comfortable use	Provides dignity in use	Compatible with usage density	Provides autonomy in use (without someone help)
	B1.Sidewalks width	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	B2. Sidewalks gradient	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	not applicable	1 2 3 4 5
	B3. Sidewalks material	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5		1 2 3 4 5
Curb ramps		Provides adaptable use	Ensures safe use	Provides comfortable use	Provides dignity in use	Compatible with usage density	Provides autonomy in use (without someone help)
	C1. Curp ramp width	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	C3.Curb ramp gradient	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	not applicable	1 2 3 4 5
	C4. Curb ramp material	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5		1 2 3 4 5
Pedestrian Crossings		Provides adaptable use	Ensures safe use	Provides comfortable use	Provides dignity in use	Compatible with usage density	Provides autonomy in use (without someone help)
	D1. Pedestrian crossings diemensions	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	D2. pedestrian crossings material	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	not applicable	1 2 3 4 5
Car Parking		Provides adaptable use	Ensure safe use	Provides comfortable use	Provides dignity in use	Compatible with usage density	Provides autonomy in use (without someone help)
	E1. Number of parking lots	not applicable				1 2 3 4 5	not applicable
	E2. Diemensions of parking lots	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	not applicable	not applicable	1 2 3 4 5
	E3. Location of car parking area	not applicable			1 2 3 4 5		not applicable
	E4. Surface material of car parking area	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5		1 2 3 4 5

Street furnishing elements		Provides adaptable use	Ensures safe use	Provides comfortable use	Provides dignity in use	Compatible with usage density	Provides autonomy in use (without someone help)
	G1. Number of street furnishing elements i.e. resting facilities, ATMs, lighting elements, garbage bins	not applicable				1 2 3 4 5	not applicable
	G2. Location of street furnishing elements i.e. resting facilities, ATMs, lighting elements, garbage bins	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	not applicable	1 2 3 4 5
	G3. Dimensions of street furnishing elements i.e. resting elements, ATMs, lighting elements, garbage bins	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	not applicable		1 2 3 4 5
Public toilets	G4.Location of public toilets	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	not applicable	1 2 3 4 5
	G5. Number of public toilets	not applicable				1 2 3 4 5	not applicable
Signages		Provides adaptable use	Ensure safe use	Provides comfortable use	Provides dignity in use	Legible	Provides autonomy in use (without someone help)
	İ1.Location of signages	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	not applicable	1 2 3 4 5
	İ2. Signage characteristics (diemensions and graphical order)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Socio-politic features		Provide adaptable use	Ensure safe use	Provides comfortable use	Povides dignity (respected) in use	Compatible with usage density	Provides autonomy in use (without someone help)
	A1. Maintenance facilities	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	not applicable	1 2 3 4 5
	A2.Regulations and laws related to enviromental management	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5		1 2 3 4 5
Socio-cultural features		Provide adaptable use	Ensure safe use	Provides comfortable use	Provides dignity in use		Provides autonomy in use (without someone help)
	B1.Attitudes of society	not applicable			1 2 3 4 5	not applicable	
Socio-economic features		Provides adaptable use	Ensure safe use	Provides comfortable use	Provides dignity in use	Compatible with usage density	Provides autonomy in use (without someone help)
	C1. Affordability of urban space activities	not applicable			1 2 3 4 5	not applicable	1 2 3 4 5