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Evaluating the Performance of Urban Public Plazas in Al Ain Downtown in Relation to Physical Characteristics and Social Principles

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Evaluating the Performance of Urban Public Plazas in Al Ain Downtown in Relation to Physical Characteristics and Social Principles

By

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Department of Architectural Engineering
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A thesis submitted in partial fulfillment
Of the requirements for the degree of
Master of Science in Architectural Engineering

Master Program of Architectural Engineering
Department of Architectural Engineering
Faculty of Engineering
United Arab Emirates University

June 2013
The MSc thesis by
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Entitled:
Evaluating the Performance of Urban Public Plazas in Al Ain Downtown in Relation to Physical Characteristics and Social Principles

is approved

Submitted in partial fulfillment of the requirements for the degree of Master of Science, Architectural Engineering

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ABSTRACT

The thesis studies the existing problems of Al Ain Downtown plazas mainly from the physical and social points of view. Al Ain downtown plazas are designed to provide a high level of social life. The main problem of these plazas is that they are used by only a particular social group. This study intends to develop a framework for evaluating and enhancing the urban public spaces in Al Ain city.

The framework is classified into two main dimensions; physical and social. Each dimension has a set of principles that affect the performance of the plaza. A descriptive analysis method is used to describe the existing situation of these principles. Different instruments are used to analyze the existing condition of the principles. Aerial maps, drawings and photographic instruments are used to analyze the physical dimension. Surveys using a questionnaire and a unique mapping process using a Geographical Information System (GIS) called cartographica and cartomobile were used for social analysis.

These data will be analyzed and studied carefully in order to evaluate the selected plazas and compare the collected data with each other. Finally set of recommendations and suggestions are discussed to find suitable solutions for the existing problems. In order to accommodate the differences in the use of social class and ethnic groups, valuable public sites are essentially needed to enable decisions that sustain cultural and social diversity and also to end up with a final framework helping the designers and planners to design successful urban public spaces.
DEDICATION

To my beloved Parents, Brothers and Sisters
ACKNOWLEDGMENTS

I would like to express my deep gratitude to Dr. Yasser Elshehtawy as my advisor and committee chairman for his constant guidance and support in reviewing and revising my thesis. His assistance has been essential to the development of my thesis.

I would also like to thank Al Ain Municipality for the support and flexibility they showed for months while preparing the research and writing this dissertation. Further, I have to recognize the support and encouragement provided by my parents, brothers and sisters.

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CHAPTER 1: INTRODUCTION

1.1 Background

One of the main problems facing contemporary cities is a lack of a clearly defined public realm. Public realm is defined as any publicly owned streets, pathways, rights of way, parks, publicly accessible open spaces and any public and civic building or facilities. The quality of our public realm is vital if we are to be successful in creating environments that people want to live and work in (ARC, 2010).

Indeed, during the last few decades many changes have been incorporated into our urban environment. The mentalities of people in cities have changed according to the universal changes happening in the world. Therefore their lives have been affected by the places they live in and also the way they live (Grimaldi & Sulis, 2009).

Visiting the town center was historically a necessity to reach shops, services and to interact with other people. New places like malls and parks replace the traditional city centers to attract people for different needs. Thus, activities were shifted to places that have higher accessibility and entertainment activities. Therefore traditional city centers lose their main function of social aggregation. Moreover, these places and activities are now dispersed and detached. As a result town centers lose importance, meaning, and critical mass, and become a peripheral and fearful space (Powell Dobson Urbanists, 2008).

Human beings are social by nature, and thrive upon human communications, which require a location. Used or unused urban public spaces must give an impression of high environmental quality, and make the surrounding area attractive. Different researchers
have showed that successful public spaces are the ones that meet the users' needs, they are accessibly independent and have meaning for larger community and society (Efroymson et al, 2009).

For this reason, great efforts have been made to improve the quality of the public realm in different countries. Some governments have worked on developing a standard for urban public spaces in a manual book (public realm) to keep the urban public spaces’ value as a social place in a city and to re-invoke the dynamic and diverse aspects of life. Policy documents on all tiers acknowledge the far-reaching importance of the quality of public realm (ARC, 2010).

In this regard, Abu Dhabi government recognized the multidimensional effect of the urban public spaces, and it paid enough attention to solve the problems of the urban public spaces. A huge amount of effort has been concentrated on improving the general quality of the streets in the UAE. The Abu Dhabi Public Realm Design Manual (AD-PRDM) was commissioned by the Abu Dhabi Urban Planning Council (UPC) to guide the development of a world-class public realm. The AD-PRDM is a planning tool that creates quality public spaces, heading towards a clear vision of the public realm. Users of the manual commissioned by (UPC) are municipalities, agencies, designers and developers (ADUPC, 2011).

AD-PRDM specifies general planning and design principles based on best practice. AD-PRDM tried to identify the public needs through door-to-door public survey (582 households were surveyed). The survey exercise provided a sense of the residents’ needs to be addressed as a part of the planning process (ADUPC, 2011). UPC tried to localize
the general principles throughout the community participation. But the question here is whether this is enough to create successful urban public spaces? Is the level of satisfaction with all urban public spaces the same? Do the general principles reflect the level of satisfaction with the existing urban public spaces? The applicability of the general principles within a specific local context need further study. Therefore, this study aims at developing tools based on the literature review, which would then be applied to evaluate the performance of three public spaces in Al Ain city, examining the relationship between the physical and social dimensions.

1.2 Problem Statement

The main problem is insufficient knowledge concerning the use of public spaces in Abu Dhabi from a social user perspective. The PDRM contains recommendations based on surveys of residents concerning their idealized public space. It does not contain any surveys of existing public spaces which may not be functioning well for whatever reason. Therefore the AD-PRDM is not entirely appropriate when looking at the particular problems with some existing public spaces. Providing only residents’ needs only will not result on a livable and successful place, for instance, by looking at the use of urban public spaces in downtown Al Ain, the public spaces provide a good places and performance from the physical dimension but it suffer from some social point of view such as social cohesion.

Since new malls and parks have been built in the city, large numbers of high-income visitors are unwilling to visit the downtown plazas in Al Ain city- UAE. Thus, these plazas are used by only low income people. This affects not only the characteristics of
central business areas and shopping malls, but also it increases hostility and suspicion among different categories of the population whose local communities tend to resist or even resent incursions of different groups of people.

These issues are not addressed directly in the AD-PRDM. Also it doesn't take into consideration the uniqueness of the existing problems in an area. It only suggests general principles that aim at improving the quality of the outdoor spaces. Accordingly, this thesis will adopt a framework of studying urban public spaces that integrates synthesized social and physical factors.

Based on the above, this thesis will investigate the following problems:

1- Insufficient empirical knowledge concerning use of public spaces in downtown Al Ain.

2- Inappropriate land use policy leading to domination of spaces by certain groups.

3- Misuse and underuse of downtown public spaces.

The research question is: Are the urban public plazas in Al Ain Downtown are successful places in relation to physical characteristics and social principles?

1.3 Objective and Scope

This study intends to develop a framework for evaluating three selected urban public plazas in Al Ain city. Moreover, it aims to focus on investigating the physical and social principles of urban public plazas, accordingly theoretical studies and local practices will be used in order to define the principles of successful urban public plazas. Also it aims to develop a tool in order to measure the success of urban public plazas. In addition,
integrate GIS with urban planning researches. Finally, it aims to find fundamental solutions for the existing problems of urban public spaces through a set of recommendations as well as adding an empirical knowledge to AD-PRDM. Also this thesis aims evaluate the effectiveness and user satisfaction of urban public plazas by comparing between selected numbers of plazas in Al Ain city.

1.4 Thesis Outline

This thesis consists of 6 chapters including an Appendix. Chapter 1 provides the study background, defines the study problems, and provides the scope and objectives of this research. Chapter 2 synthesizes the findings from a comprehensive review of the literature that is relevant to this study. Chapter 3 provides the methodology followed in this research including the procedure, data collection locations, methods used in analyzing collected data, and apparatus used in the data collection process.

Chapter 4 provides an overall detailed data collection of this study, which comprises site analysis data, social behavior maps analysis, user’s survey data and Al Ain Municipality planners’ interviews. Chapter 5 provides the results of data analysis, conclusions and recommendations for the study. Finally, the Appendix consists of detailed material pertinent to the body of the thesis (e.g. interviews documents and questionnaire, data tables and data charts, etc.).

1.5 Significance of the Research

This study holds important implications for theory as well as practice. No other study in the downtown area of Al Ain city or even in the United Arab Emirates generally has
incorporated these variables within the general framework of liveability of urban public spaces. This study holds great importance in helping the Municipality planners, so designers identify the levels of liveability and diversity among its users. Another contribution of this study is to help the Abu Dhabi Urban Planning Council (UPC) to determine factors that affect user’s diversity and how planners can improve the conditions of the built environment in order to increase the liveability of urban public spaces. In addition, most of the research has been done on the variables, studied only rarely within the Arabian Gulf region specially the one that integrates a geographic information system (GIS) within the urban planning researches.

1.6 Limitation of the Study:

Although the research has reached its purposes, there are some unavoidable limitations. Successful urban public plazas principles are inherently multi-dimensional. They include physical, social, environmental, economic and political dimensions. This research focuses only on the physical and social principles, given the scope and objectives of the thesis. Moreover, due to limited time available, this research is conducted only on a small size of population, who completed the survey and the questionnaire devised for this research. Therefore, to generalize the results for larger groups, the study should have involved more participants at different levels. Secondly, the participants sometimes are worried about their answers so they might discourage other participants’ interest and motivation in participating in the questionnaire. Finally, similar researches are done rarely within the Arab Gulf region. Such research usually deals with a specific type of urban public spaces (Plaza, Square) or looks at other forms of public gathering points like parks, street corners, malls etc.
CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This Chapter provides a literature review of the relevant previous studies that attempt to determine successful urban public spaces principles. It also provides methodologies of evaluating the principles of urban public spaces.

The chapter is organized into four main sections. The first section provides a general overview of urban public spaces, definitions, typologies and activities. The second section describes the physical and social principles that improve the quality of urban public spaces. Also it describes the importance of integration between social and physical principles to achieve the best results. The third section analyzes local practices in improving urban public spaces (AD-PRDM). Finally, the fourth section provides a final framework that helps in evaluating the existing urban public spaces. This sequence allows us to compare different theoretical principles with local practices in order to identify the degree to which they match and to identify the deficiencies.

2.2 Urban Public Spaces

The concept of public space comes from the Greek ‘agora’, which was generally considered to be where citizens could make free speech, share intellectual opinions and enjoy convenience from market exchange (Zhou, 2012).

Throughout history, public spaces of cities have been centers of diversity. Because houses and streets were separated according to social class or ethnic lines in a society, public spaces were the place for people of different backgrounds to meet each other. City
streets, parks, and public transportation were melting pots of cultural differences; places where people might encounter other people who dressed and spoke differently; they might face new opinions that never heard amongst their "peers"; they see people engaged in activities they never saw before. The diversity of people exposed to in these public spaces opens their minds to new horizons, ideas, and cultures, and leads them to new thoughts and enables them to see beyond their insular world (Besser, 2001).

2.2.1 Definition

The urban public space is a two dimensional inherent entity; the physical dimension i.e. place and the social dimension i.e. people. However, places represent the spatial constituent of an urban public space (physical dimension). This refers to a general physical design of a place like a plaza or a park. The other components are the social component of that urban public space, which is understood as its 'daily dynamic pattern of users' (social dimension) (Golicnik, 2004).

Many researchers were depending on these two dimensions in order to define the urban public spaces. For example, Bada defines urban public spaces from the physical dimension perspective as “the void between buildings for movement and for outdoor activities such as streets, plazas and parks” (see figure 1). He mentions that these places are considered as the framework of a city, and there have been the center of different theories of urbanism and city planning through history. Additionally, for him the urban public spaces play a significant role in reaching sustainability. Bada indicates that sustainability is driven by environment quality, public health and people’s well-being. He
emphasizes the importance of the quality of public life through a set of recommendations and laws in order to improve public spaces as the framework of the city life (Bada, 2009).

On the other hand, Carr et al (1992) defines urban public spaces from the social perspective as the stage upon which the drama of communal life unfolds. They state that the streets, squares, and parks of a city incarnate the ebb and flow of human exchanges. They find these dynamic spaces as an essential matching part to more settled places and routines of work and home life that provide the channels for movement, the node of communication, and the common grounds for play and relaxation (see figure 2) (Carr, 1992).

From these two definitions it is clear that urban public space is one of the important elements in a city. The integration of both the physical and social dimensions is a key to successful urban public space and better social life. Urban public spaces associated with different social interactions provides spaces for people to practice daily life activities and

Figure 1: Plaza San Pietro, Vatican City – Rome (Milano, 2009)
it provides places for them to collaborate and even for interdisciplinary interaction between citizens (Timmer and Seymour, 2006).

It is important for urban planners and developers to realize that public space is a physical linkage between buildings and land uses and it sustains the marketing, manufacturing, administrative, and transportation activities of the cities. The latter facilitates a link between people, thus serving to bind together the social order of local community by creating a locus for random social interaction, including recreation, conservation and entertainment (Gencel and Velibeyoglu, 2006). From this fundamental point, it is important to take into consideration both the physical characteristics and the social life of the city in order to design or renovate a successful urban public space.

Figure 2: The social interaction of Wolfe Tone plaza (Lawton, 2010)
2.2.2 Typologies of Urban Public Spaces:

Urban public spaces may be a gathering place located either as a neighborhood part, downtown, in a special region, at a waterfront or other area within the public realm that helps to promote social interaction and a sense of community (American Planning Association, 2011). Actually any unconstructed land within a village, a town or a city provides, or has the possibility to provide, environmental, social and/or economic benefits to people, directly or indirectly (Williams and Green, 2001).

There are two kinds of urban spaces: green urban public spaces and civic urban public spaces: Green open spaces are characterized by open space that consists of any undeveloped or structure, water or geological feature area within urban areas (see table 1). Examples include: parks and gardens, amenity green space, children's play areas, sports facilities, green corridors, natural/semi-natural green space and other functional green space (see figure 3). Civic open space is typically urban squares or plazas, market places and other paved or hard landscaped areas with a civic function. (Williams and Green, 2001)

Figure 3: Peckham Square, London, 2005 (Lawton, 2010)
Table 1: A Typology of Open Space

<table>
<thead>
<tr>
<th>Open spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any un-built land within the boundary of a village, town or city which provides, or has the potential to provide, environmental, social and/or economic benefits to communities, whether it is direct or indirect.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Green spaces</th>
<th>Civic spaces</th>
</tr>
</thead>
</table>
| A subset of open space consists of any vegetated land or structure, water or geological feature within urban areas. *Examples:*  
- Parks and gardens  
- Amenity green spaces  
- Children’s play areas  
- Sports facilities  
- Green corridors  
- Natural/semi-natural green space | A subset of open space consists of urban squares, market places and other paved or hard landscaped areas with a civic function. *Examples:*  
- Civic squares  
- Market places  
- Pedestrian streets  
- Promenades and sea fronts |

2.2.3 Activities of Urban Public Spaces:

A good way of breaking down the various relationships between a space and its social activities is to analyze the nature of the activities taking place. Gehl (1996) proposes that there is a unique relationship between the types of activity happening in public space and the quality of that space. He orders activities as in table 2 below:

Table 2: A typology of activities - source: (Williams and Green, 2001)

<table>
<thead>
<tr>
<th>Activities</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Necessary Activities</td>
<td>They are important and essential to everyday life – like going to work or dropping children to / brining children from school. Such activities happen whether the quality of public spaces is good or not.</td>
</tr>
<tr>
<td>Optional Activities</td>
<td>They are not completely important, but necessary – like when you walk with your dog or read a book or magazine in a park.</td>
</tr>
<tr>
<td>Social Activities</td>
<td>They are related to the interaction between people in public spaces like: playing football, exchanging talks, meeting friends to have an activity.</td>
</tr>
</tbody>
</table>
Public spaces provide an environment in which it is possible that people can succeed in establishing social contacts (see figure 4). In fact, the sense of community achieved through social interaction is a necessary and essential aspect to some qualities of a city such as liveability, survival and safety. Alternatively, the dilapidation of public spaces leads to a reduction in the sense of community and for example the failure of public transportation systems leads to an over-dependence on cars thus reducing the liveability of a city (U.S.I, 2012).

![Figure 4: Volunteers painting high stool pieces (Ari and Green, 2012)](image)

2.3 Successful Urban Public Space Principles

As the definition of urban public spaces in the section above shows, urban public spaces accommodate both physical and social dimensions. The physical dimension represents the physical features of the place and its relation with the surrounding buildings and streets. The social dimension represents the interaction of the users with both the place and other users. In order to achieve the best design we must take into consideration the integration between both these aspect. The following sections will explain the recommended principles to create successful urban spaces.
2.3.1 The Physical Characteristics of Urban Public Spaces

This section will consider a 'place's form and its main articulation', representing the physical component of an urban open public space. This refers to a general physical layout of a place such as a square or a park. Although places are unique and distinctive, they have certain characteristics in common, which can be distilled through spatial analysis and into some basic design elements or spatial definitions. These key design elements can have a major impact on the success or failure of the public realm.

This study relies on two main studies in the common physical characteristics of urban public spaces. The first study is the “Public Places Urban Spaces: The Dimensions of Urban Design” by Carmona, Heath, Tiesdell in Oc, 2010. The other study is the “Seven principles of good design” by Commission for Architecture and the Built Environment CABE, 2011.

The following analysis adapts these two main sources (Carmona, Heath, Tiesdell and Oc, 2010) (CABE, 2011).

The place Character; places should have their own identity, respond to and reinforce unique designs of development and culture. Successful places are distinctive and unforgettable. In addition, all the elements of the built environment work together to create a character that reflects the identity of the place and its community (see figure 5).
Figure 5: Main street character (Richards, 2008)
Continuity and Enclosure; public and private spaces should be clearly integrated, and the continuity of building frontages should be endorsed. Buildings can define open spaces by circling them. The activities inside buildings can bring life to the boundaries of public spaces. Buildings can also secure private open spaces by closing them off and over viewing them (see figure 6).

Figure 6: Town center continuity and enclosure (Richards, 2008)

Quality of the Public Realm; public spaces should be successful and attractive; they should be suitable for all users, including disabled and elderly people (see figure 7). Successful places have outdoor spaces that are attractive and comfortable. These places
will be donated to the public realm as a demonstration of civic pride and the value attached to public life.

Figure 7: Metropol Parasol, Seville, Spain (Mayer, 2011)

Ease of Movement: places should be easy to get to and move through. Places should be inter-connected and put people before traffic while integrating land uses and transport modes. A place should always be easily used and reached by everyone by any means of transportation or walking. Pedestrians in particular should be able to get around safely and conveniently. Making a place more walkable reduces car usage, congestion and air pollution. Also it improves public health. The success in terms of movement is related back to “how well the spatial configuration fits real pattern of human behavior”. The use of space is governed by two considerations: its attractiveness, in term of movement, how easy it is for people to move in. It needs to be easy for to-movement and through-movement space, and possess attractive visual properties in order to satisfy to people’s activity needs (Bada, 2009).
Legibility: places should have a clear image, be easy to understand and easily identify the purpose of the space (see figure 8). They should provide recognizable routes, landmarks and waypoints to help people find their way around. Successful places are easy to navigate. Knowing where you are and how to get around is essential to enjoy a place and all its attractions.

Figure 8: Legibility of town center (Richards, 2008)

Adaptability: places should be capable of adapting and responding to changes in economic, social and technological conditions. Places should be able to accommodate change over time (see figure 9), create continuity with the past and respond to new social, market or environmental demands. Climate change also means the design of places should be flexible enough to be able to respond to changes in weather patterns.
Diversity; places should have variety and choice (see figure 10). There should be a mixture of appropriate developments and uses that meet the local needs of all sectors of society. Successful places offer a variety of uses and activities, shops and services. Choices in employment and housing for households of all sizes and incomes are important for making a place inclusive and welcoming. A place is successfully designed if it can be used by as many people as possible, regardless of their physical ability or background. A range of different architecture adds interest and can reflect the diversity of the local community. Variety in landscape treatment and wildlife habitats can help support biodiversity.
2.3.2 Social Principles

The functionality of an urban public space can though be negatively affected by environmental and social factors. Problems of accessibility and urban development pressures cause great deterioration of the urban image, as well as civic activity. Successful social integration in the city depends on creating opportunities for social interaction among people. In this sense, the use of public space and particularly the plaza, cafes and streets are important elements for encouraging social cohesion. Thus it is important to consider the social dimension as an important aspect in creating a successful urban public space (Herdoiza, 2012).

Stephen Carr in Public Space constructs a human dimension to see the relationships between places and people, aiming to manage the space more efficiently. His central tenet is that public spaces' value grows out of an understanding of why people go to spaces, how they actually use them, and what they mean to their users over time. A system is proposed to include the human dimension in general design and management guideline for public spaces. There are three critical dimensions: needs, rights and meanings (Zhou, 2012).

Social principles are considered to form the soul of a city, especially the urban public spaces. By definition, social principle provides the basis upon which the physical, social, mental comfort and personal development needs of all its residents are formed. The key values defining this theme are: accessibility, equity, participation, conviviality, dignity and empowerment. Basically, liveability by definition is the ‘quality of life’ as practiced or lived by the residents within a city or a region. Accordingly social principles help to
sustain the quality of life we value or which we desire. In practice, it is mostly viewed as improving the economic, social, cultural and environmental well-being of existing and future residents (Timmer and Seymour, 2006).

A liveable place or city is one where people have a healthy life and is easily accessible for those wishing to use it. A liveable place is also a place for all categories of society (see figure 11). Hence it is not supposed to be only for the people who work and earn money from it, but for those who live outside in the suburbs and in the surrounding areas. It is important for children and the elderly to have an easy access to the green areas to have a place to play and gather, meeting and talking to each other. Finally the liveable city is a city for all (Timmer & Seymour, 2006).

![Figure 11: The New Times Square Pedestrian Plaza (Glick, 2010)](image)

A liveable place is closely associated with a liveable community. Community liveability highlights the environmental and social quality of an area, perceived by inhabitants, employees, customers and visitors, including health and safety (traffic safety, public health and personal security), the quality of social exchanges (fairness, neighborliness, respect, community identity and pride), local environmental conditions (cleanliness, noise, dust, air quality and water quality), chances for refreshment and entertainment, aesthetics and morals, and accessibility of distinctive cultural and environmental
resources (e.g., historic structures, mature trees, traditional architectural styles (TDM Encyclopedia, 2010).

Moreover, continuous community liveability brings benefits to people who live or work or even visit an area. Also, it increases business works and property values, and it sometimes improves safety and public health. Liveability, is defined chiefly by conditions in the public realm; places in which people interact normally with each other and within community, including: parks, transportation terminals other public facilities, and streets. Therefore, it can be affected by planning decisions and public policy (TDM Encyclopedia, 2010).

It is difficult to evaluate liveability. Some of the underlying factors are difficult to measure, like the ones related to social conditions and perceived environment. Regarding community liveability, people’s preferences and priorities tend to be different from each other. Some factors like: friendliness, safety, and aesthetics are important liveability points. These are also indicators of occupants’ pride and consideration that in turn through a feedback process also contribute positively to liveability. Therefore, it may be difficult to decide which factors are the most important ones. In spite of such difficulties, we can though evaluate liveability by using several indicators. Below is a list of social principles that affect the liveability of urban public spaces (see table 3) (TDM Encyclopedia, 2010).
<table>
<thead>
<tr>
<th>Principle</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attractiveness</td>
<td>It means streetscapes and other public facilities/services</td>
</tr>
<tr>
<td>Community character</td>
<td>Liveable community tends to be valued by having a unique character or identity to make it special, and introduce a sense of community pride.</td>
</tr>
<tr>
<td>Community cohesion:</td>
<td>This refers to the degree of social networking in a community, and the inhabitants' cooperation and interaction level.</td>
</tr>
<tr>
<td>Walkability</td>
<td>Walking is a way people use to travel, socialize and know their community</td>
</tr>
<tr>
<td>Accessibility and Transportation Choice</td>
<td>To give people more choices and it supports equity objectives: the quality of autonomous mobility for elders, children, and people of special needs.</td>
</tr>
<tr>
<td>Recreation</td>
<td>Includes tranquility, fresh air and having fun, exercising and formal and informal community communication</td>
</tr>
<tr>
<td>Affordability</td>
<td>Allows people of different income levels and categories to be part of the community.</td>
</tr>
<tr>
<td>Equity</td>
<td>Aims to provide individuals with access to efficient resources to interact well and socialize perfectly within their community and to open ways for their personal development and advancement by distributing the resources among communities fairly to assure full contribution and association</td>
</tr>
<tr>
<td>Safety perception</td>
<td>Contributes to safety and security of public places</td>
</tr>
</tbody>
</table>

In order to evaluate the social behavior of the urban public space, behavior maps provide a description of the distribution of behaviors spatially. Behavioral mapping is a type of systematic observational research that tracks behavior over space and time. The tracking may focus on a particular place or be based on an individual's movements. The value of these maps lies in the possibility of developing general principles regarding the activities and users of space. Behavioral evidence is extracted from the behavior maps into layers.
of spatial information to give a better understanding of the individual and collective
patterns of use (UCDAVIS, 2012).

The overlap of behavioral maps can show some characteristics and changes in using
chosen open spaces in terms of activities, number of people engaged, gender and other
such variables. New technological developments like geographic information systems
(GISs) and the Internet have altered decision-making and data can be collected,
disseminated, analyzed, and displayed easily. For example, the integration of global
positioning system (GPS) technology in public space research and studying transitory
ways of people in towns, has been increasing in popularity. In fact, GIS is now pre-
eminent in spatial analysis and planning processes (Golicnik, 2010).

2.3.3 Integrating the Physical Characteristics and the Social Principles

Focusing on only one of the two dimensions in the design will cause a failure on that
project. This was proved in a study by one of the most famous analysts of urbanism and
sociology. Whyte (1980) documented street life in New York City in terms of pedestrian,
physical street, sensory street, space design, water, wind, trees, management of space,
carrying capacity, steps and entrances, blank wall, sun and shadow, bounce light, etc. His
analysis of how space works through narrating specific sites' condition provides
empirical proof of key elements in successful public space creation (Zhou, 2012).

William H. Whyte (1917-1999) examined New York City's parks and plazas composed
mostly of empty space to help sketch a complete design for the city. One of his famous
arguments is "It's hard to create a space that will not attract people, what is remarkable,
is how often this has been accomplished".
Places are more important than design is one of his findings of his study (Street Life Project in The Social Life of Small Urban Spaces) was published in 1980. He shows that the number of occupants directly related to size of the empty space is not a valid analysis. In addition, he finds that the shape does not factor into the park use either. Whyte comes to the conclusion that park use is in direct relation with the amount of suitable space. Finally, he finds that aesthetics is not related to the usage of the space surrounding it.

Whyte proves that the design must comply with a set of existing conditions and social acceptance in order to become a successful place. Whyte describes his ideal plaza as one in which there is a high proportion of couples and groups. He concludes his study with set of principles affecting the liveability and usability of urban public spaces (see Table 4) (Whyte, 1980).

<table>
<thead>
<tr>
<th>Principle</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life of Plazas (style)</td>
<td>Concerns the way the people use plazas, the plaza life and the plaza activities.</td>
</tr>
<tr>
<td>Sitting Space</td>
<td>Whyte discovered that one of the major elements in plaza use is sitable space. People tend to sit most where there are places to sit.</td>
</tr>
<tr>
<td>The role of natural elements</td>
<td>Orientation and physical features enhance the view and the attractiveness for a plaza’s visitors.</td>
</tr>
<tr>
<td>Food</td>
<td>Food is a good stimulator for visitors to eat. &quot;If you want to seed a place with activity, put out food.&quot;</td>
</tr>
<tr>
<td>Relationship of the space to the main pedestrian traffic flow.</td>
<td>Busy streets increase number of visitors and creates a special social life.</td>
</tr>
<tr>
<td>Capacity</td>
<td>Plazas tend to be self-leveling. People tend to keep crowding at a manageable level.</td>
</tr>
<tr>
<td>Triangulation</td>
<td>It provides a social bond between people. Strangers are more likely to talk to one another in the presence of such a stimulus.</td>
</tr>
<tr>
<td>Structure</td>
<td>Structure of the city controls the number of plazas and its typology. Such places can be pleasantly and frequently visited if their urban designs are carefully handled.</td>
</tr>
</tbody>
</table>

Table 4: Whyte principles (Whyte, 1980)
Whyte’s principles are simple and flow naturally from these foundations (see Table 5):

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>People want places to sit</td>
<td>Steps are the best way to provide this, and there are specific proportions that can either encourage or detract from their use. Movable chairs offer a flexible counterpart to steps.</td>
</tr>
<tr>
<td>People want things to look at</td>
<td>Stores facades have to be designed to pull in onlookers with entrances that form a seamless transition between the street and building. Orientations and physical features are important for the attractiveness and aesthetic of the place.</td>
</tr>
<tr>
<td>Exclusion leads to unintended consequences</td>
<td>Street theater and music, illegal vendors and eccentric characters all add to the life of the street rather than detract from it.</td>
</tr>
<tr>
<td>Places are used differently at different times.</td>
<td>The cycle of the traditional work day and home life will dictate the primary hours of use. Also the movement of the sun plays a significant role in capacity of the place.</td>
</tr>
<tr>
<td>Places need ongoing management</td>
<td>Always public spaces need regular cleaning. Also special events should be arranged, particularly to fill in time slots that are underutilized.</td>
</tr>
<tr>
<td>Separation of vehicles and pedestrians</td>
<td>Skywalks and underground concourses force pedestrians either up or down a level and can suck the life out of a street.</td>
</tr>
</tbody>
</table>

2.4 Abu Dhabi Public Realm Design Manual:

Recently Abu Dhabi Urban Planning Council started developing a public realm handbook or manual (AD-PRDM). This handbook is the primary source of advice for Emirate-wide planning. Key agencies involved in the public realm planning include the Abu Dhabi Municipality, Al Ain Municipality, the Department of Municipal Affairs, Department of Transportation, Tourism Development and Investment Company and Abu Dhabi
Authority for Culture and Heritage (ADACH). The AD-PRDM builds on other planning documents to provide a framework for the future of Abu Dhabi (Abu Dhabi UPC, 2011).


The AD-PRDM planning process is based on numerous stakeholder meetings and consultations conducted with key agencies involved in public realm planning, including: The Department of Municipal Affairs (DMA), Abu Dhabi Municipality (ADM), Al Ain Municipality (AAM), Department of Transportation (DoT), Tourism Development and Investment Company (TDIC), Abu Dhabi Authority for Culture and Heritage (ADACH). Additionally, an opinion survey of 10882 households was conducted to gather input on the availability and use of public spaces. The survey assesses the public’s opinion to help inform the policies and guidelines produced in the AD-PRDM.

The objectives of this survey were to investigate the size, structure and characteristics of households throughout Abu Dhabi Emirate and to gain insights into the current patterns of use of community facilities in the Emirate and frequency of visits. Opinions were also sought about the community facilities that households perceived as missing or
inadequately provided. The findings of the survey concerning the key qualities for ideal public places from the point of view of households were: Safety and Security, Proper Separation to Ensure Family, Privacy, Variety of Shopping, Shaded Areas, Food, Drink and Restrooms. The survey was completed as part of the process of drafting the AD-PRDM and provided a preliminary assessment of residents' perceived needs for parks.

AD-PRDM provides guidelines for making a world-class public realm. The PRDM is a planning instrument, creating standard public spaces that work toward a vision for the public realm. It forms the foundation for public realm planning. In addition, it identifies the public realm planning context, and it provides leading statements for all public realm development. Moreover, it explains community-wide public realm system concepts. The manual summarizes by laying out the vision recommendations, principles, and policies towards achieving the aspirations of the AD-PRDM. AD-PRDM is classified into nine major design principles explaining how the public realm communicates with the following major themes (see Table 6):

<table>
<thead>
<tr>
<th>Principle</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liveability</strong></td>
<td>Provide for safety, comfort, diverse activity, social actions and a high standard of life</td>
</tr>
<tr>
<td><strong>Identity</strong></td>
<td>It is a mix of Arab culture, heritage, values traditions and expression, as embodied by Abu Dhabi.</td>
</tr>
<tr>
<td><strong>Access</strong></td>
<td>The public realm guarantees full access to streetscapes, parks, public places and waterfronts and encourage commercial operations.</td>
</tr>
<tr>
<td><strong>Connectivity</strong></td>
<td>Generally public realm is unified. It enhances the people's movement by providing nonstop land and water access for walkers</td>
</tr>
<tr>
<td><strong>Place Making &amp; Design Excellence</strong></td>
<td>Human-scaled, high-quality, visual entertainment places, flexible, multi-functional, and climate-responsive design, high-quality landscape and plaza designs.</td>
</tr>
<tr>
<td><strong>Environmental Stewardship</strong></td>
<td>The public realm is built to accomplish power and water competence.</td>
</tr>
<tr>
<td>Inclusivity</td>
<td>Public realm provides a secure, calm assortment of different places, activities and practices for all people to enjoy</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Activation</td>
<td>The public realm will instantly be improved by confirming activities and functions are fittingly joined and planned.</td>
</tr>
<tr>
<td>Shared Ownership &amp;</td>
<td>With the support of public and private sectors and entities, public places can be maintained and enhanced</td>
</tr>
<tr>
<td>Implementation</td>
<td></td>
</tr>
</tbody>
</table>

The overall principles of the AD-PRDM include the characteristics of the urban public spaces and livability principles except missing the legibility principle. But the AD-PRDM principle comes in one group without classification. AD-PRDM raises an important principle which is the Environmental Stewardship. These principles will help to achieve both environmental and social sustainability, and ensure a high-quality resource that all stakeholders will contribute to and enjoy. Moreover, Table 7 summarizes all successful urban public spaces principles.

The manual generally only empirically addresses designing a successful urban public space. It does not highlight the problems of the existing urban public spaces; it ignores the existing situation of land use and social life in such places. The plazas are only used by certain groups of people which raises a social problem. My study then aims at developing a framework to evaluate and enhance existing urban public space in Al Ain city.
2.5 Theoretical Framework:

Following the literature review which looked at best practice and the analysis of AD-PRDM, the following framework summarizes the successful urban public space principles.

Table 7: Successful urban public space principles

<table>
<thead>
<tr>
<th>Physical characteristics of urban public spaces</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character</td>
<td>A place with its own identity</td>
</tr>
<tr>
<td>Continuity and enclosure</td>
<td>Where public and private spaces are clearly distinguished</td>
</tr>
<tr>
<td>Quality of the public realm</td>
<td>A place with attractive and well-used outdoor areas</td>
</tr>
<tr>
<td>Ease of movement</td>
<td>A place that is easy to get to and move through</td>
</tr>
<tr>
<td>Legibility</td>
<td>A place that is easy to navigate</td>
</tr>
<tr>
<td>Adaptability</td>
<td>A place that can change easily</td>
</tr>
<tr>
<td>Diversity</td>
<td>A place with variety and choice</td>
</tr>
<tr>
<td>Environmental Stewardship</td>
<td>Built to accomplish power and water competence</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social principles</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>Safe paths, visual surveillance and good maintenance</td>
</tr>
<tr>
<td>Attractive</td>
<td>Physical features, activities and diversity</td>
</tr>
<tr>
<td>Community character</td>
<td>Tends to value having a unique identity that makes it special and instills a sense of community pride</td>
</tr>
<tr>
<td>Community cohesion</td>
<td>Positive personal interactions between people</td>
</tr>
<tr>
<td>Walkability</td>
<td>Short distance from the public transportation</td>
</tr>
<tr>
<td>Accessibility and Transportation Choice</td>
<td>Easy movements and quality mobility</td>
</tr>
<tr>
<td>Recreation</td>
<td>Quiet, fresh air and opportunities for fun and relaxing</td>
</tr>
<tr>
<td>Affordability</td>
<td>Allows people of all income classes to be part of a community</td>
</tr>
<tr>
<td>Equity and participation</td>
<td>Community can join the decision makers and the developers</td>
</tr>
</tbody>
</table>

There is a deep relationship between the physical characteristics of the urban public spaces and the social principles. There are many overlaps between the theoretical studies and AD-PRDM. For example, the character of the urban public space has an effect on their attractiveness and the community character as well. Attractive places attract more people than the normal ones.
Moreover, continuity and enclosure have a strong relationship with the safety and security. Public spaces should be clearly notable to provide safer places and this can be achieved by creating good overall visual surveillance. Also, the continuity of building frontages should be endorsed in order to provide privacy and a sense of security. Another important characteristic is the quality of the public realm.

Another example, providing a legible urban public space helps to improve the accessibility and the attractiveness of the place while Adaptability helps to improve the social cohesion through adapting different community categories and characters. Also, adaptable places must be affordable in order to satisfy all community categories. Final example; the diversity assists in increasing the community cohesion by providing diverse services for all categories. Also, diversity of facilities and activities may increase the attractiveness and improving the visitor’s recreation.

This research identified a variety of principles that support assessment tools at both the project design phase and the project operational phase. These principles carefully work to balance relationships between physical features and dynamics of use. For better understanding, we can classify the successful design principles to dimensions, principles and indicators. This hierarchy helps to explain the principles in details and gives the best practice in order to have better solutions for the design. Many indicators are sometimes linked with more than one principle or dimension. The physical characteristics’ and social principles’ indicators are summarized in the tables below:

42
<table>
<thead>
<tr>
<th>Physical characteristics</th>
<th>Indicator</th>
</tr>
</thead>
</table>
| Character                | • Place identity  
                         | • Theme, architectural style  
                         | • A variety of scales and massing  
                         | • Physical features  
                         | • Comply with adjacent theme |
| Continuity and enclosure | • Connection and integration between different places and plazas  
                         | • Provide multi-function spaces and multi-function trips (mixed used)  
                         | • Good site selection – look over land use  
                         | • Sense of enclosure like Fences, walls, gated plazas, levels |
| Quality of the public realm | • Provide roads, paths and squares that cater for social connections and social activities  
                             | • Design delight movement  
                             | • Designed for a variety of ages and abilities |
| Ease of movement         | • Distribution of Locations that minimize trip lengths, and are well served by public transportation  
                         | • Design that fosters walking and cycling and discourages car reliance by applying some polices like reduced parking or parking taxes  
                         | • Providence of Public transportation |
| Legibility               | • Good Site selection  
                         | • Clear understanding  
                         | • Good view  
                         | • Reduce obstacles that blocking the view |
| Adaptability             | • Design urban public spaces for use change  
                         | • Design urban public spaces easily extended for evolving population circumstances  
                         | • Design multi -functional open space and social space provision |
| Diversity                | • Design Mixed use places  
                         | • Providence higher densities  
                         | • Increase choice and diversity  
                         | • Increasing net and gross density |
| Environmental Stewardship| • Recycling of materials  
                         | • Recycling water locally |
- Using regional materials
- Improving construction waste management
- Improving operational waste management
- Organic waste management
- Modular pavement and hardscape cover

<table>
<thead>
<tr>
<th>Social principles</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Principle</strong></td>
<td><strong>Indicator</strong></td>
</tr>
<tr>
<td>Safety</td>
<td>- Provide safe traffic-calmed streets with good visual surveillance</td>
</tr>
<tr>
<td></td>
<td>- Provide access to work and services</td>
</tr>
<tr>
<td></td>
<td>- Provide facilities easily accessed by foot or public transport, with special attention to needs of children the disabled and older people</td>
</tr>
<tr>
<td></td>
<td>- Provide access to housing for all social groups</td>
</tr>
<tr>
<td></td>
<td>- Neighborhood social balance and continuity</td>
</tr>
<tr>
<td>Attractive</td>
<td>- Variety of seating options and physical features</td>
</tr>
<tr>
<td></td>
<td>- Variety of views</td>
</tr>
<tr>
<td></td>
<td>- Corporate theme and identity</td>
</tr>
<tr>
<td></td>
<td>- Variety of services and multi function trips</td>
</tr>
<tr>
<td></td>
<td>- Good quality of materials</td>
</tr>
<tr>
<td></td>
<td>- Good maintenance</td>
</tr>
<tr>
<td></td>
<td>- A variety of scales and massing</td>
</tr>
<tr>
<td>Community character</td>
<td>- Provide public space that create interaction opportunities</td>
</tr>
<tr>
<td></td>
<td>- Create identity</td>
</tr>
<tr>
<td>Community cohesion</td>
<td>- Provide public space that create interaction opportunities</td>
</tr>
<tr>
<td></td>
<td>- Provide activities management programs</td>
</tr>
<tr>
<td>Walkability</td>
<td>- Design in respect to Catchment area (in respect to walking distance)</td>
</tr>
<tr>
<td></td>
<td>- Distribution of Locations that minimize trip lengths, and are well served by public transportation</td>
</tr>
<tr>
<td></td>
<td>- Design that fosters walking and cycling and discourages car reliance by applying some polices like reduced Parking or parking taxes</td>
</tr>
<tr>
<td></td>
<td>- Providence of Public transportation</td>
</tr>
<tr>
<td>Accessibility and</td>
<td>- Increasing the accessibility to public transport</td>
</tr>
<tr>
<td>Transportation Choice</td>
<td>- Providing less parking spaces and parking tax</td>
</tr>
<tr>
<td></td>
<td>- Integrate bus stops with the public spaces</td>
</tr>
<tr>
<td>Recreation</td>
<td>- Variety of views</td>
</tr>
<tr>
<td></td>
<td>- Variety of seating options</td>
</tr>
<tr>
<td>Affordability</td>
<td>Equity and participation</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>▪ Site selection (Decrease noise and air quality)</td>
<td>▪ Involve people in design</td>
</tr>
<tr>
<td>▪ Providing suitable mixed shops, restaurants and services</td>
<td>▪ Involve people in maintain local project such as park, sport field</td>
</tr>
<tr>
<td>▪ Encouragement for local offices/workshops, home-working and tele-centres</td>
<td>▪ Manage local resources</td>
</tr>
<tr>
<td>▪ Design multi-functional open space and social space provision</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 3: STUDY METHODOLOGY

3.1 Introduction

The main aims of the study are to evaluate the effectiveness and user satisfaction of urban public spaces by comparing between selected numbers of plazas in Al Ain city. This chapter presents the methodology adopted for the study.

The study adopts a descriptive method approach and involved a three tier methodology:

i. Collecting user's data

ii. Conducting users surveys

iii. Statistical analysis to evaluate existing urban public spaces

The study utilizes multi-dimensional principles involving physical and social dimensions, integrating qualitative and quantitative data specifically. The following methods are used to provide over all information in order to assess and analyze the existing conditions of the urban public spaces of Al Ain Downtown. In addition, multiple methods are used for the purpose of a comparative case study that allows the researcher to pinpoint aspects of satisfaction of downtown urban public spaces in Al Ain, also to assure reliability and validity of data.

Figure 12 illustrates the detailed methodological steps adopted for the study. The specific methods involved in sites selection, user’s data collection within the selected plazas and user’s survey are discussed in detail in the following sections of this Chapter.
Literature Review

Final Framework

Site Selection

Gold Souq Plaza  Al Ain Town Square  Al Muraba’a Plaza

Data collection

Physical analysis

Maps
Site visit
Photos

Social analysis

Mapping

Conducting survey

Variables

Nationality
Gender
Age
Activity
Statues

Data Analysis

Figure 12: Methodological steps
3.2 Site Selection

The criteria that were adopted for selecting the sites are:

iv. Size of the urban public space
v. The daily use
vi. Downtown area
vii. Integration with surrounding facilities

On the basis of the above criteria, three different plazas within Al Ain downtown area were selected. Al Ain is an oasis city located in the eastern part of United Arab Emirates. It is known for its hot and arid weather. The downtown urban structure of the city is a gridded network of streets with traffic light intersections. The main open spaces, such as plazas and public gardens catering for public life, are situated within the city center. Most of the plazas were originally created by Al Ain Municipality. The case studies represent three plazas in different parts of Al Ain Downtown. The plazas to be investigated are Al Muraba’a Plaza, Gold Souq Plaza and Al Ain Town Square (see figure 13).
Selection of the plazas was based on the following considerations: their location (Downtown area - next to each other), size (the biggest), daily use, and the different ways in which they are linked to their surroundings. Also these plazas have the potential to be used by similar groups and users thus allowing for comparison. The details of the selected urban public spaces around the Al Ain downtown area are detailed as follows:

A. **Al Muraba’a Plaza**

The first plaza, Al Muraba’a, was selected for its location which enables it to be used conveniently and for the services available such as restaurants, shops and bus stop node. It is located in the main street of Al Ain Downtown, which is a very busy street. The plaza layout is mainly characterized by its two-level space. The height difference between the two levels is about 1 meter (5 steps - 20 cm each), and the connection is a series of stairs which do not cause any significant visual obstruction within the plaza. The space layout is characterized by a central fountain surrounded by a staircase on three sides and a flat grass on its western side. A memorial fort is located beside this plaza giving it its name. The surrounding land uses include restaurants, salons, studios, a few shops and a building under construction. The shape of this plaza is triangle and it has shaded seating areas.

B. **Al Ain Town Square**

Al Ain Town Square is the second plaza and is situated within a mostly residential area, such as Al Mada compound which is one of the major compounds of the city. The plaza is not clearly seen from the main streets and it is located behind some commercial buildings. These buildings obscure the view from the surrounding streets. The plaza
layout is mainly characterized by its two level spaces: the higher section consists of cafes, restaurants, internet cafes, tailors and boutiques. The lower section is a huge dancing fountain with a large terrace. The plaza is located beside Sheikha Salama Mosque, one of the most famous mosques in Al Ain City.

C. **Gold Souq Plaza**

The third plaza is the Gold Souq Plaza, and it is located on the busiest street of Al Ain Downtown. The layout of the plaza basically contains a green space crossed by a pattern of pathways together with a fountain, some seating places and a few service activities. The space layout is characterized by two main parts which are separated by Sheikha Salama intersection. Each part consists mainly of linear pathways and a central fountain. The fountain is surrounded by shaded seating areas. It is different from the other plazas since it is covered by some trees at its core. The mixed use activities of the plaza consist of boutiques, gold markets, Sheikha Salama mosque, gift shops and a traditional market, making it a liveable place.

3.3 **Data Collection Instruments**

Five main instruments are used in this research in order to obtain the data from the physical and social dimensions.

- **Physical characteristics:**
  - Aerial maps
  - Photography

- **Social maps:**
  - Questionnaire
  - Behavioral maps
  - Time lapse photography
3.3.1 Photos and Aerial Maps

Aerial maps have a variety of applications. Aerial maps are a valuable tool in site analysis and project planning. They provide clear image of the surrounding areas and can be very helpful for urban analysis purposes. In this study, photos and aerial maps help to analyze the physical characteristics of the selected plazas. The main physical principles that will be evaluated are character, continuity and enclosure, quality of the public realm, ease of movement, legibility, adaptability, and diversity.

3.3.2 Users Data Collection

As mentioned before (social principles section), the behavior maps provide a description of the distribution of behaviors throughout the place. The value of these maps lies in the possibility of developing general principles regarding the activities and users of the space. Behavior evidence is extracted from the behavior maps into layers of spatial information to give a better understanding of the individual and collective patterns of use. The overlapping of behavior maps can show some characteristics and changes in the chosen open spaces in terms of activities, number of people engaged, gender and all other variables (Golicnik, 2010).

In this thesis, the observation method selected is the most ideal research method for such a study; according to its ability to describe behaviors as they occur in natural settings and without interference from the researcher. The objective of this method is to investigate the main issues that can increase and develop the relationship between people and place. Also it provides a general idea about the user’s lifestyle and their integration with the place which are evidence for the social dimension. In addition, it also investigates the
main issues that affect people's willingness to visit downtown public spaces in Al Ain city. Users' data were obtained from the GIS system called cartographica (see section 3.3.3). The user's data are classified into categories. Table 8 below shows the main categories and their classification:

<table>
<thead>
<tr>
<th>Category</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male/female</td>
</tr>
<tr>
<td>Nationality</td>
<td>Local/ Arab/ Asian/ Westerners</td>
</tr>
<tr>
<td>Activities</td>
<td>Seating/relaxing/standing/shopping/eating</td>
</tr>
<tr>
<td>Age</td>
<td>&lt;18/ 19-25/ 25-35/ 35-45/ &gt;45</td>
</tr>
<tr>
<td>Time spent</td>
<td>&lt;10/ 10-30/ 30-60/ 60-90/ &gt;90</td>
</tr>
<tr>
<td>Coming with</td>
<td>alone/friends/family</td>
</tr>
</tbody>
</table>

The researcher is able to watch and observe different visitor activities and attitudes during the visit. Observer's locations varied; there is no constant route for the researcher movements within each public space, cameras are used in order to have a full view of all day activities during twelve hours (9:00 am to 9:00 pm). GIS system (ipad, Cartographica and Cartomobile) is used in order to record the activities during the observation time. Different layers are used to identify and record all the activities during different days and periods for the different plazas.

Observation is done through scheduled visits to the three urban public spaces of Al Ain city downtown in a five-month period (January, February, March, April, and May of 2012) (see Table 9). These months are chosen because the weather is likely to be fine and the outdoor activities are pleasant. A whole day observation unit represents three sections: morning (10:00–11:00), late afternoon (17:00–18:00) and evening (21:00–22:00); during weekdays as well as weekends. These two days are chosen to differentiate between the activities of weekends and weekdays. As places are too big to be covered by
one overview across the entire place, they are divided into sub-areas. Each plaza is divided into three main sub-areas and each such spatial unit is observed for 1 hour. The observations of each sub-area are usually conducted from one location in a setting where a good overview across the place is provided.

### Table 10: Research timeline

<table>
<thead>
<tr>
<th>Task</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methodology - Observation &amp; Survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilot test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mapping</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charts and results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research Report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Results &amp; Finding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussion &amp; Conclusion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Draft Report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Report</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 3.3.3 Data Entry

Originally, data are collected by using a GIS program, called Cartomobile. Cartomobile is designed for people who need to work with geospatial data to create maps and analyze data. An iPad2 is used as a data entry tool. The iPad touch features help to find the precise location of the input data. The system is a GIS enabling maps that give a geographic reference coordination which precisely identifies the users’ location. This system is much cheaper than other GIS systems and also is easier for the beginner and for people who are not familiar with GIS systems.

The first step is setting up the basic map. Detailed AutoCAD drawings of the three plazas are merged into the ARCGIS program and placed on the exact location of the plazas. The second step is exporting the map into a shape file that complies with the Cartomobile
system (see figure 14). The third step is copying the file to the iPad 2 using iTunes (see figure 15).
The fourth step is setting up the layers and their menu (see figure 16.A-16.G). The fifth step is starting collecting the data as scheduled (see figure 16.H-16.L). Colored symbols are defined, and placed on a map of place when any certain activity is actually seen in a place and each symbol represents data relating to the data of a single person data. The sixth step is copying the data to the Apple desktop using iTunes. The final step is creating the social behavior maps using Cartographica software as well as extracting the data into excel spreadsheets to be used in analysis (see figure 17).

Figure 16: Cartomobile
The main reason for using Cartographica program is because it is a professional software program that produces different maps with layers. This software is a flexible tool which has the ability to save the data as other format such as; Adobe Illustrator, electronic documents, images in a different format and database sheets. Furthermore, the data input can easily merge from the iPhone or the iPad using the Cartomobile application and iTunes program. Cartomobile is therefore an application that allows the iPhone or the iPad to be used as a cheap and convenient data input tool.

The spatial-behavior analysis, based on GIS, resulted in usage-based spatial articulation of places, representing shapes, sizes, densities and intensities of places' occupancies. This application helps to classify the data input in layers and folders as well. In this way the researcher can save much time to learn how to use the system.
3.3.3 User's Survey

The measurement of the plaza user’s satisfaction focuses on the extent to which the plaza design provides levels of satisfaction and meets the user’s needs. The user’s satisfaction evaluations focus on the following social dimension principles:

- Assess user’s perceptions of the attractiveness of the space and the provided services
- Assess user’s perceptions of privacy and safety in the overall context of the selected plazas.
- Assess the social interaction and other activities
- Assess user’s perception of the accessibility, walkability, affordability and Equity.

A pilot questionnaire is distributed to a sample of 15 urban public space visitors; representing a cross section of visitors and inhabitants. This pilot questionnaire is completed in the early stages of the study, and is aimed to get an overall view of Al Ain downtown urban public spaces. Also it is intended to obtain information related to user’s satisfaction concerning the main aspects of the Al Ain downtown plazas.

The pilot test consists of 4 pages with 6 main sections (visitor information, time spent, physical features, liveability, urban structure, and services). The pilot questionnaire contains 40 questions representing different fields that are associated with public space design. This pilot questionnaire helps to refocus on the fields important to the visitors and inhabitants. Also it helps to gain information that may help in modifying the main questionnaire.
As a consequence of the pilot study, the main issues highlighted by visitors are given increased importance in the main questionnaire. The main questionnaire is designed to cover various factors in the urban public spaces that affect visitor's attitudes (satisfaction with the provided services, safety, privacy, and comfort). The final questionnaire is therefore tailored to better serve the purposes and the objectives of the study.

The resulting questionnaire is in the form of personal interviews for Al Ain city downtown visitors, specifically designed to elicit the required information. It is built with several question formats (open-ended, multiple choice, scaled questions and rating questions). Open-ended-question interviews are designed to be suitable for visitors of various statuses (singles/families). It is distributed to 120 visitors who represent different categories of Al Ain downtown public space visitors.

The questionnaire is translated into three languages: Urdu, Arabic and English. Unfortunately the researcher faced problems of of being unable to communicate with the Indian users of the selected plazas. For that he assigned an Urdu language assistant (translator) to help him to translate the questionnaire. Also he entrusted the assistant with the task of meeting the Indian users to complete the questionnaire.

3.3.4 Time-lapse - Video:

Time-lapse photography is a technique where the frequency at which film frames are captured (the frame rate) is much lower than that used to view the sequence. When played at normal speed, time appears to be moving faster and thus lapsing. This technique aims to look over a full day’s activities for each plaza. A photographic camera (Nikon D300s) is installed to take sequential pictures on each plaza. The place of the camera is
selected carefully to cover almost all areas of the plaza. Permission from flat users in the first floor was sought to allow the researcher to take a better angle view and place the camera to face the Al Muraba’a plaza. On the other hand, camera placed on top of a car at Gold Souq Plaza. While it placed beside one of the shops that have a good view at AlAin Town Square plaza. The camera starts taking pictures at 9:00 am and stops at 9:00 pm. The problem facing the researcher is that the camera needs to have the battery changed every 5 hours. The researcher used two batteries to solve this problem. He was though forced to visit the camera location every 5 hours to change the battery.

3.4 Data Analysis Methodology

In order to evaluate the effectiveness of the final framework from both the physical and the social dimensions, descriptive methods of data analysis is adopted. This includes descriptive statistics. The overall objective of the statistical analysis is to:

- Examine the performance and dynamics of the plazas.
- Assess the social interaction and activities

3.4.1 Physical Analysis

This is mainly qualitative and descriptive in nature. Site analysis using aerial maps and photos are used to describe the existing situation. The physical characteristics of the plazas are analyzed in detail. The plaza evaluation is summarized in a table with a rating scale.
3.4.2 Social Analysis

A questionnaire is used to explore complex feelings and attitudes of the visitors. This instrument used as descriptive analysis. Users’ perceptions are analyzed based on a ranking scale concerning their opinions on a number of subjects presented in the questionnaire. Also, time lapse pictures give a descriptive analysis of the activities held in the plazas. This technique aims to show the overall movement of the plaza and the dynamics of the activities and social interaction as well.

Users’ data are obtained from the Cartographica application for each of the selected plazas. A statistical analysis is performed in order to quantify the differences in the measurements of effectiveness and satisfaction of Al Ain downtown plazas. The statistical analysis is based on the user’s data collection in the selected three plazas for two days (weekend and weekday). Different comparisons are done; the first is to show which zones of the plazas are more dynamic on weekdays and weekends to observe the users’ level of satisfaction with the place. The second one is done to show which of these three plazas is used more.
CHAPTER 4: RESULTS

4.1 Introduction

This Chapter presents the analysis of data collected during the survey period for the three plazas. In order to evaluate the effectiveness of, and satisfaction with, the urban public spaces a cross-sectional statistical analysis methodology is employed. This is in addition to the plaza user opinion survey on the satisfaction level with the existing conditions. Cross-sectional analysis methodology is based on an evaluation of the performance of the existing urban public spaces. The evaluation involves an application of descriptive and analytical statistical methods. The following sections provide the results of the data analysis.

4.2 Physical Analysis (physical characteristics principles)

The method of the physical analysis is a descriptive analysis. Each site is analyzed, based on the physical characteristics. Aerial maps, AutoCAD drawings and photos are used to analyze the plazas. Character, continuity and enclosure, quality of the public realm, Ease of movement, legibility, adaptability and diversity are the main physical principles which were analyzed. Based on these principles and its' indicators (see table8) the following subtitles will analyze the data collection and show the result of the selected plazas.

4.2.1 Background:

Al Ain downtown area is a crowded area which is considered as the commercial heart of Al Ain city. It is located in the center of Al Ain city (city center) and it is surrounded by farms and the oasis (see figure 18 & 19). Almost all the buildings, located in the
downtown area, are ground floor plus three floors. The buildings have a mixture of functions with the ground floor and mezzanine used for commercial purposes with the rest given over to residential use. The downtown area is generally characterized by its three lanes street network with traffic light intersections.

Figure 18: Downtown buildings footprint

Figure 19: Downtown plot area with green areas
4.2.2 Al Muraba’a Plaza:

This plaza is 6586 m² in size and it is located in the Main Street. The heights of the surrounding buildings range from three storeys to five storeys. The surrounding street pattern allows the plaza to be seen from all directions. In order to simplify analysis of the overall plaza area, the plaza is divided into three main zones. The first zone (A) is visible from the Main Street and the second zone (B) is the one located between the two building rows. While the third zone (C) is the northern edge part which is adjacent to the secondary street in the front of Al Muraba’a fort (see Figure 20).

The principle physical characteristics of urban public spaces are as discussed before in the literature review namely: character, continuity and enclosure, quality of the public space, ease of movement, legibility, adaptability, and diversity of users. The first characteristic of the public space is its character. There is no specific character for the design of this plaza. The main elements of the plaza are seating chairs, shading device, water fountains, trees, grassed areas, and paved pathways (see Figures 21, 22 and 23). These elements do not have any particularly special character. Al Muraba’a fort gives the
plaza its name and the historical identity. Thus this fort makes the plaza memorable, with a place that makes people appreciate it easily.

Figure 21: View from the South side of the plaza

Figure 22: View of Zone B

Figure 23: Inner view of Zone B

The second principle is the continuity and enclosure. In this respect, this plaza is located between the main street and a secondary street interspersed with two rows of buildings. This plaza is surrounded on all sides by streets. It makes the space distinguished. Plaza zone A is enclosed by the main street and the first row of the building. Similarly zone B is located between the two rows of buildings, and it gives a sense of enclosure and security. Zone C is located in a lower level than the street, and it gives a sense of enclosure (see Figure 24). The continuous street frontages have minimal blank gaps between buildings. The layout of this plaza is well connected with the other two zones of the plaza and other adjoining areas.
The quality of the public realm is the third principle and it is related to the physical elements such as plaza pavement, planting, lighting, orientation, shelter, signage, street furniture and the way it is overlooked. The overall conditions and quality of this plaza setting are considered acceptable as can be seen in Figure 25.

The water fountains and different levels help to create attractive spaces and encourage visitors to sit in this plaza (see Figure 26). Interestingly, this plaza is designed to create a variety of spaces such as: shaded setting areas, green areas, paths and stairs.
Figure 25: Quality of this plaza setting

Figure 26: The water fountains
Easy of movement is the fourth principle. This principle is related to the convenience, safety and comfort with which people go to and pass through buildings and spaces. The pedestrian thoroughfares are connected to the main roads and are integrated with the various parts of the plaza (see Figures 27 and 28). Also the public transport is designed to be an integral part of the plaza. The walking distance between the facilities and the public transport is minimal which makes visiting by public transport particularly easy. The junctions between the different paths can help identify places and make an interaction point.

Figure 27: Passages and streets network.
Legibility is the fifth principle and it refers to giving a clear image to easily understand the urban public spaces. This plaza is located next to one of the key landmarks in Al Ain city (see Figure 29). Al Muraba'a fort helps people to find their way to this plaza. Also, the clear view from the main street makes the plaza memorable and legible. This main street represents the most active street in Al Ain city. In addition, once there the water fountains, shaded seats, levels and landscape give a sense of boundaries (better legibility).

Adaptability is the sixth principle, and it refers to flexibility and the extent to which a space can be changed to suit different usages. This plaza has no space for future expansion but the surrounding existing land usage can be changed. Also, since this plaza
has been surrounded by specific kind of markets and goods, the level of adaptability is low. Activities are confined only for the low income Asian laborers (see figure 30). The surrounding mixed use buildings and the bus stop point help to increase the variety choices of activities for users. Sometimes there are huge numbers of visitors, especially when there are televised cricket matches. Asian workers usually gather to enjoy watching cricket matches at the barber's shop, construction materials shops and restaurants (see Figures 30, 31, 32, 33, 34 and 35). However the limited facilities within this plaza limit its appeal to all sectors of the population. In particular the lack of formal children's play facilities reduces its attractiveness to families.

Figure 30: Asian laborers visiting the Zone A
Figure 31: Asian laborers visiting the Zone B

Figure 32: Asian laborers visiting the Zone C
Figure 33: Asian laborers visiting the Zone D

Figure 34: Asian laborers visiting the Zone E
The last principle is the diversity and it refers to the variety and choice. The existing land uses that surround the plaza are residential, commercial, and public spaces. These varieties of services can make the most opportunities for higher densities and intensive activity at locations with good access to public spaces. Which result on a high density of users.

Most of the surrounding commercial stores and goods are Asian oriented especially the restaurants (see Figure 36). This causes the presence of huge number of the low income labors and workers in this place (see figure 37). This category starts to use this plaza to be a gathering point and social interaction place, which minimizes the presence of families who dislike being in this plaza which is surrounded with low income users. This social profile means that this facility has minimal diversity of users and visitors. Its appeal therefore reflects its catchment and surroundings and it can therefore be considered to be acting primarily as a local facility with a limited social mix and not to be satisfying any kind of city-wide role.
Figure 36: High density of Asian laborers

Figure 37: High density of laborers in Zone B

Figure 38 shows a site plan analysis map with the main characteristics of the site. Different characteristics are represented by different symbols such as street hierarchy, parking, views, physical features and type of use are as defined on the legend (see Figure 38). Table 10 summarizes all the physical characteristic of Al Muraba'a Plaza separated into the key identified design principles. Three scale values (weakly achieved, partially achieved and strongly achieved) are used in order to evaluate the degree to which each design principle is satisfied.
Table II: Al Muraba’a Plaza - physical characteristics principles

<table>
<thead>
<tr>
<th>Principle</th>
<th>Existing condition</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character</td>
<td>• No specific character for the design, but Al Muraba’a Fort gives the historical identity.</td>
<td>Weakly achieved</td>
</tr>
<tr>
<td>Continuity and enclosure</td>
<td>• The plaza has a sense of enclosure and the plaza is connected with other adjoining areas.</td>
<td>Partially achieved</td>
</tr>
<tr>
<td>Quality of the public realm</td>
<td>• Inappropriate maintenance • Good services</td>
<td>Partially achieved</td>
</tr>
<tr>
<td>Ease of movement</td>
<td>• People can pass easily through buildings and spaces. • Public transport is designed to be an integral part of the plaza.</td>
<td>Partially achieved</td>
</tr>
<tr>
<td>Legibility</td>
<td>• Muraba’a Fort helps people to find their way to this plaza. • Also the clear view from the main street makes the plaza memorable and legible.</td>
<td>Strongly achieved</td>
</tr>
<tr>
<td>Adaptability</td>
<td>• This plaza suffers from the lack of a broad social mix of users. • There are no specific facilities or activities for families. • No space for future expansion</td>
<td>Weakly achieved</td>
</tr>
<tr>
<td>Diversity</td>
<td>• lack of provided services which result on minimal diversity • Social inclusion minimizes the diversity of users and visitors.</td>
<td>Weakly achieved</td>
</tr>
</tbody>
</table>
In order to give a final evaluation value for this plaza, a numerical scale is used. This scale gives an overall numerical evaluation of the physical characteristics of the plaza. The scale ascribes the value of one point credit for weakly achieved characteristics, two point credits if the characteristic is partially achieved and three point credits where it is strongly achieved. Since there are six important principles, each principle has similar weight in the final evaluation. Thus each principle will have 16.67% weight out of the total overall percentage. Moreover, this value will be divided to three values because we have a numeric sale with maximum value of 3. Thus the unit value will be 5.56%. Table 11 summarizes the final value of the physical characteristics of the plaza.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Evaluation</th>
<th>Weight</th>
<th>Unit scale</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character</td>
<td>Weakly achieved</td>
<td>1</td>
<td>5.55</td>
<td>5.56</td>
</tr>
<tr>
<td>Continuity and enclosure</td>
<td>Partially achieved</td>
<td>2</td>
<td>5.55</td>
<td>11.12</td>
</tr>
<tr>
<td>Quality of the public realm</td>
<td>Partially achieved</td>
<td>2</td>
<td>5.55</td>
<td>11.12</td>
</tr>
<tr>
<td>Ease of movement</td>
<td>Partially achieved</td>
<td>2</td>
<td>5.55</td>
<td>11.12</td>
</tr>
<tr>
<td>Legibility</td>
<td>Strongly achieved</td>
<td>3</td>
<td>5.55</td>
<td>16.65</td>
</tr>
<tr>
<td>Adaptability</td>
<td>Weakly achieved</td>
<td>1</td>
<td>5.55</td>
<td>5.55</td>
</tr>
<tr>
<td>Diversity</td>
<td>Weakly achieved</td>
<td>1</td>
<td>5.55</td>
<td>5.55</td>
</tr>
</tbody>
</table>

The overall evaluation of this plaza is a ranking of 66.67% in terms of achieving the desirable physical characteristics principles.

### 4.2.3 Al Ain Town Square

The area of this plaza is 14819 m² and it is surrounded by secondary streets on all sides. This plaza is confined by a mosque from the south, three rows of buildings on each side (from the north, east and west). The heights of the surrounding buildings range from three floors to five floors. The surrounding streets allow the plaza visitors to easily park their cars near the plaza.
This plaza consists of a wide shaded courtyard, an un-shaded courtyard, fountains and three main buildings with a variety of shops and cafeterias (see Figure 39). Two of these buildings are stores with two facades or accesses one each from outside and inside the plaza. A third building is of one floor construction with only one facade or access from the inside. These buildings provide a variety of shop areas and sizes which give a variety of services and goods that serve different categories visitors and indeed different nationalities.

Figure 39: Al Ain Town Square - Zones

This plaza has a special character because it is located in the city center. The name of this plaza is "Al Ain Town Square" which identifies it as a key city center facility (see Figure 40). The plaza comprises a mixture of the modern and local design theme. The modern design is represented by the large glazed facade; metallic shading and special design of lighting fixtures (see Figure 41).
On the other hand, the local culture is represented on the wide tensile tents and palm trees. This mixture gives a more varied character to this plaza thus perhaps appealing to a wider variety of visitors. The musical fountains which operate daily from 10:00 pm to 11:00 pm are considered to be the main attraction of this plaza. These musical fountains make the plaza memorable and give it a unique character. In a similar manner to Al Muraba’a Plaza this plaza will characterised as three distinct zones A, B and C as shown in Figure 39.

![Figure 40: Al Ain Town Square main gate](image-url)
Regarding continuity and enclosure, this plaza is surrounded by three rows of buildings on three sides and one mosque. The buildings on the northern and western rows are mixed-use while the eastern row comprises residential buildings (Al Mada compound). Sheikha Salama Mosque is located along the boundary to the south. These buildings all act give the plaza a sense of enclosure and security. This plaza is a walled plaza with four main gates that increase the sense of safety and security. Also the continuous street frontages have minimum blank gaps between buildings. These gaps reduce the degree to which the street overlooked. The existing layout of this plaza is well connected with other adjoining areas. People who live in Al Mada compound use this plaza as short cut to reach the western buildings. Also the existing buildings and the structure help to integrate and maintain the continuity of the built fabric (see figure 42, 43 and 44).
The quality of the public realm in this plaza is excellent. Musical water fountains, high quality paving materials, special lighting design, wide tents, clear signage, secured gates and availability of seating area all support the high quality of this plaza. The layout of this plaza takes into account the local climate conditions including the daylight and temperature. Big trees and a (tented?) shading device help to shade more areas and improve the coolness of the place.

The facade is brightened by active uses like shops, restaurants, entrances, corridors, and large windows. Also the views of the courtyard from outside add to its transparency giving interest to passers-by and making the building’s function apparent. The courtyard has two levels with wide a staircase that attracts people to sit. On the other hand, the wide, open paved court on the lower level attracts kids to skate and play. The musical water fountains also attract people to visit the plaza (see Figure 45). This plaza is
designed to create a variety of types of space such as shaded setting areas, green areas, paths and stairs. Thus, this plaza meets the needs established by the pattern of local economic and life style.

The movement in this plaza is convenient, safe and comfortable. People go to, and pass easily through, buildings and spaces. The thoroughfares are connected with the main roads through safe corridors from all directions. The surrounding secondary streets are connected with the main street from three corners, which improve traffic flow (see figure 46).

Parking is available distributed on all the sides, which helps to reduce vehicle congestion. The public transportation is available in the main streets surrounding the plot. The walking distance between the facilities and the public transport is also short making
access by public transport convenient. The junctions between the different paths can help to identify different interaction places which make an interactional point.

Figure 46: Al Ain Town Square pedestrian movements

This plaza has a legibility problem because it is not visible from the main street. The surrounding buildings hide the view and make an unclear image of this plaza (see Figures 47 and 48). Sheikha Salama Mosque is a well known landmark in Al Ain city and is located beside the plaza to the south. This mosque is an important guidepoint in helping people to find their way to this plaza. The quality of the public realm of this plaza like the availability of shading devices, open yard, pathways and steps help the plaza to be legible.

Figure 47: Blocked view from the northern main street
Concerning adaptability, this plaza has no space for future expansion but the surrounding existing land use can be changed. However, this plaza hosts different events and activities in its courtyard. It has different shops, goods and restaurants. The sale of Arabic sweets, Arabic food, pastry, Chinese food, Philippine food, cafes and grocery attract different communities to visit the plaza. The large open space in the courtyard accommodates different activities like playing football, skating, watching the musical water fountains, relaxing and sitting on steps (see Figures 49 A, B and C). Some communal and social events are also held in this courtyard such as an open bookshop, local cuisine and open shops. This plaza through its different cafes and shisha places is considered a magnet for the locals and Arab singles who like to visit the plaza to watch matches and play cards (see Figure 50). this allow for more social mix and adaptability.
As for diversity, the plaza offers a good level of variety. The choice of shops and facilities are probably more than at other plazas. This mixture of services helps to increase the number of visitors. The variety of shops, goods and restaurants in this plaza appeals to different sectors (see Figure 51). Availability of female oriented shops like salons, boutiques, sewing tools shops, accessories shops and gift shops also help to attract families (see Figure 52). The fact that the land around the plaza is used for residential and commercial facilities, also helps to attract a more diversified visitor base.
Similar to Al Muraba’a Plaza, a site plan analysis map has been created in order to show the main characteristics of this site. Different symbols represent different characteristics of the site such as street hierarchy, parking, views, physical features and type of use. These are shown on the legend of Figure 53. Table 12 summarizes all the physical characteristic principles of Al Ain Town Square. Three scale values are again used as before to evaluate the extent to which each principle is achieved ie weakly, partially or strongly.

**Figure 53: Al Ain Town Square - site analysis**

### Table 13: Al Ain Town square - physical characteristics principles

<table>
<thead>
<tr>
<th>Principle</th>
<th>Existing condition</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character</td>
<td>Mixed between modern and local culture</td>
<td>Partially achieved</td>
</tr>
<tr>
<td><strong>Continuity and enclosure</strong></td>
<td>Fenced square with four gates</td>
<td>Strongly achieved</td>
</tr>
<tr>
<td><strong>Quality of the public realm</strong></td>
<td>Inappropriate maintenance</td>
<td>Strongly achieved</td>
</tr>
<tr>
<td><strong>Ease of movement</strong></td>
<td>Clear movement patterns</td>
<td>Partially achieved</td>
</tr>
<tr>
<td><strong>Legibility</strong></td>
<td>Blocked views from the main street</td>
<td>Weakly achieved</td>
</tr>
<tr>
<td><strong>Adaptability</strong></td>
<td>Different shops and restaurant</td>
<td>Strongly achieved</td>
</tr>
<tr>
<td></td>
<td>Variety of attractive places</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open markets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No space for future expansion</td>
<td></td>
</tr>
</tbody>
</table>
Similar to first plaza the table 13 below summarizes the overall evaluation of Town square plaza.

Table 14: The overall evaluation of Town Square Plaza

<table>
<thead>
<tr>
<th>Principle</th>
<th>Evaluation</th>
<th>Weight</th>
<th>Unit scale</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character</td>
<td>Partially achieved</td>
<td>2</td>
<td>5.55</td>
<td>11.1</td>
</tr>
<tr>
<td>Continuity and enclosure</td>
<td>Strongly achieved</td>
<td>3</td>
<td>5.55</td>
<td>16.65</td>
</tr>
<tr>
<td>Quality of the public realm</td>
<td>Partially achieved</td>
<td>2</td>
<td>5.55</td>
<td>11.1</td>
</tr>
<tr>
<td>Ease of movement</td>
<td>Partially achieved</td>
<td>2</td>
<td>5.55</td>
<td>11.1</td>
</tr>
<tr>
<td>Legibility</td>
<td>Weakly achieved</td>
<td>1</td>
<td>5.55</td>
<td>5.55</td>
</tr>
<tr>
<td>Adaptability</td>
<td>Strongly achieved</td>
<td>3</td>
<td>5.55</td>
<td>16.65</td>
</tr>
<tr>
<td>Diversity</td>
<td>Strongly achieved</td>
<td>3</td>
<td>5.55</td>
<td>16.65</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>88.8 %</strong></td>
</tr>
</tbody>
</table>

The overall evaluation of this plaza is 88.8 % achieving the physical characteristics principles.

4.2.4 Gold Souq Plaza

The area of this plaza is 11557 m² and it is surrounded by a main street on its Northern boundaries and secondary streets on all other orientations (see Figure 54). The plaza is divided into two by of secondary streets with the main road at a busy traffic light intersection. The the plaza is divided into two main zones. These two zones consist of seating areas, paved corridors and wide green area that represents approximately 45 % of the total area. The plaza has few parking places (only 8 in total) and it is surrounded by crowded streets.
This plaza has an unusual design. The Roman arcades and arches give the place a special character (see Figure 55). The natural trees and water fountains create a valuable and pleasant place. In addition the lighting, railings, litter bins, pavement, fountains and plaza furniture and other plaza elements contribute to a particular identity for this place (see Figure 56).
Figure 55: Roman arcades

Figure 56: Water fountains, seating features and shading devices
Regarding connectivity and enclosure, this plaza is surrounded by the Main Street and secondary streets (see Figures 57 and 58). Also it has planting barriers surrounding the plaza and giving it a sense of enclosure and privacy. This plaza is considered as a focal point that connects different plots of Al Ain downtown. The plaza is well located with respect to the adjacent buildings and helps to integrate and maintain the continuity of the built fabric.

![Figure 57: The main street - North orientation](image)

![Figure 58: Secondary street - South orientation](image)

The quality of the public realm and its overall condition is acceptable. The physical elements of this plaza are in good condition. Paving, planting, lighting, street furniture and shading are all compatible with each other and are visually appealing (see figure 59). The design of this plaza has variety of types of space such as shaded seats areas, green areas, paths and fountains. This plaza responds well to the needs of different parts of the community and their style of life.
The movement in this plaza is easy because it has clear paths and corridors. It is convenient, safe and comfortable so people go to and pass through the various spaces. The cross style design of the paths connects with the main sidewalks of the surrounded streets (see Figure 60). The junctions between different paths can help to identify the places and make an interaction point.

This design helps to make the plaza permeable from all directions, and making movement easy and convenient. The two zones are linked together by a long passage that allows visitors to walk through all its parts (see Figure 61). The linear walking distance between the facilities and the public transportation is short, which makes the plaza easily accessible by public transportation.
Concerning its legibility, this plaza can be seen from the main street. It has a clear image and easy to understand since it is surrounded by streets (see Figure 62). This plaza is also
located next to two of the most well-known landmarks in Al Ain city, namely the Gold Souq and Sheikha Salma Mosque. The proximity of these landmarks help people to find this plaza easily (see Figures 63 and 64). Also the large size of this plaza and the lush green area helps to make this plaza memorable.

![Figure 62: Clear view from the main street](image)

![Figure 63: Gold Souq shops](image)

![Figure 64: Sheikha Salma Mosque](image)

From the adaptability point of view, this plaza has no space for future expansion. But it has enough space for hosting new activities and facilities. On the other hand, the surrounded existing land use can be changed. It accommodates different activities and categories of visitors during the day. It serves both the inhabitants and visitors who come out of the Downtown. Both singles and families visit this plaza and interact successfully within different parts of this plaza. For example, kids play football in the paved area and the grass area (see Figure 66). However Asian workers sometimes relax and sleep over the seating area, and this can disturb families and tourists (see Figure 65 A, B and C).
This plaza has diversity in its seating areas for its users. Because there is only one café that just sells hot drinks, the plaza lacks food services (see Figure 67). This may affect the attraction to visitors because there are no restaurants or cafeterias that serve the plaza. The mixture of services can make the most opportunities for higher densities and
intensive activity at locations with good access to public spaces. Most of the surrounding commercial stores’ goods are gold and fashion.

![Image](image_url)

**Figure 67: Only one cafe serve the plaza**

A site plan analysis map was created in order to show the main characteristics of the site (see Figure 68). Table 14 summarizes all of the physical characteristic principles of Gold Souq Plaza. Three scale values are used in order to evaluate the success in matching each principle as per the previous analysis. ie weakly achieved, partially achieved and strongly achieved.
Table 15: Gold Souq Plaza - physical characteristics principles

<table>
<thead>
<tr>
<th>Principle</th>
<th>Existing condition</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character</td>
<td>• Mixture of the Roman and local culture character</td>
<td>Partially achieved</td>
</tr>
<tr>
<td>Continuity and enclosure</td>
<td>• Surrounded by streets</td>
<td>Weakly achieved</td>
</tr>
<tr>
<td>Quality of the public realm</td>
<td>• Good maintenance</td>
<td>Strongly achieved</td>
</tr>
<tr>
<td></td>
<td>• Good services</td>
<td></td>
</tr>
<tr>
<td>Ease of movement</td>
<td>• Clear movement patterns</td>
<td>Partially achieved</td>
</tr>
<tr>
<td>Legibility</td>
<td>• Seen from main street</td>
<td>Strongly achieved</td>
</tr>
<tr>
<td></td>
<td>• Surrounded by streets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Located next to two main landmarks (Gold Souq and Sheikha Salma Mosque)</td>
<td></td>
</tr>
<tr>
<td>Adaptability</td>
<td>• Social interaction and relaxing activities</td>
<td>Partially achieved</td>
</tr>
<tr>
<td></td>
<td>• Kids playing football</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Families visit the plaza from adjacent buildings and from outside Al Ain Downtown</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Only one café serve the place</td>
<td></td>
</tr>
<tr>
<td>Diversity</td>
<td>• Diversity of users</td>
<td>Weakly achieved</td>
</tr>
</tbody>
</table>
Similar to other plazas, Table 15 summarizes the overall evaluation of Gold Souq Plaza.

Table 16: The overall evaluation of Gold Souq Plaza

<table>
<thead>
<tr>
<th>Principle</th>
<th>Evaluation</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>weight</td>
</tr>
<tr>
<td>Character</td>
<td>Partially achieved</td>
<td>2</td>
</tr>
<tr>
<td>Continuity and enclosure</td>
<td>Strongly achieved</td>
<td>3</td>
</tr>
<tr>
<td>Continuity and enclosure</td>
<td>Strongly achieved</td>
<td>3</td>
</tr>
<tr>
<td>Ease of movement</td>
<td>Partially achieved</td>
<td>2</td>
</tr>
<tr>
<td>Legibility</td>
<td>Weakly achieved</td>
<td>1</td>
</tr>
<tr>
<td>Adaptability</td>
<td>Strongly achieved</td>
<td>3</td>
</tr>
<tr>
<td>Diversity</td>
<td>Strongly achieved</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The overall evaluation of this plaza a 77.7% achieves the physical characteristics principles.

4.3 Social Principles

4.3.1 Behavioral Mapping:

This section comments on the actual uses and activities in the observed plazas of Al Ain downtown. This tool is used to assess two of the social dimension principles which are the social character and the community cohesion, and to illustrate that the role of observation and use of GIS databases can play a major role in public space design, monitoring and decision making. Actually, GIS database helps as a recording tool which provides basic descriptions and information about activities of places. These records represent different maps and layers that offer an understanding of those places. These maps can also represent the spatial data of behavior patterns as patterns reflecting
occupancies at different times of a day, or days of the week. Furthermore, it enables the designer to look at places from any desired combination of those attributes.

4.3.1.1 Al Muraba’a Plaza:

Throughout the observation, there are 2532 users at Al Murab’a Plaza: 1161 ones on weekdays and 1365 ones on weekends (see table 16). Concerning usage, 99.8% (2505 person) of male’s users use the plaza while only 0.2% (6 people) of females are using the place.

Table 17: Al Muraba’a Plaza observation (summary table for total weekend and weekday visitors)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Nationality</th>
<th>Activities</th>
<th>Age</th>
<th>Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>M</td>
<td>F</td>
<td>Asian</td>
<td>Local</td>
</tr>
<tr>
<td>Total</td>
<td>2326</td>
<td>6</td>
<td>2595</td>
<td>3</td>
</tr>
<tr>
<td>Percent</td>
<td>99.8</td>
<td>0.2</td>
<td>99.8</td>
<td>0.1</td>
</tr>
</tbody>
</table>

This huge difference is caused by the low income goods and services provided by the surrounding markets. Single labors come from all around the city to buy their needs and meet their friends in this plaza, and this causes a high density of singles in the place which makes families and females afraid to visit this plaza.

This also affects locals’ presence. Referring to data collection, the two lowest categories of the communities attending are the locals and the Westerners: the most present people
are Asians (98.9%), and Arabs (0.8%) (See figure 69). On the other hand, the majority of users are young laborers who are between (25-35 years) and they represent (59.7 %), and the laborers who are between (35-45 years) and they represent 30.9 %. The rest of the users are only (9.4%).

Concerning activities, more than half of the users prefer to stand (58.7%), because they like to move around and meet. 40.8 % of the users like to sit on the available seats in the plaza. Only 0.2 % of users like to eat in the plaza and only 0.1 % of the users like to relax and shop. The collected data shows that most of the visitors (81 %) interact with their friends while (18.5 %) of the visitors stay alone and (0.6%) visit the place with their families (See figure 70 & 71).

Figure 69: Asian labors attendance at evening time
A kind of comparison between weekends and weekdays is drawn in table 17 and table 18. Figure 70 & 71 show reduction in females’ number (6 out of 2532 users) which represent a failure of the community cohesion. Table 17 & table 18 show, whether on weekdays or weekends, a large number of Asian laborers appear when there are activities in the plaza while the number of other communities are very few (only 27). The huge difference represents a diversity weak point affecting both the community character and the community cohesion. Table 19 shows that the maximum numbers of users come during
the afternoon period (4:00 Pm to 5:00 Pm) on weekdays, and the evening period (9:00 to 10:00) on the weekends.

Table 18: Al Muraba'a Plaza (Weekday)

<table>
<thead>
<tr>
<th>Time</th>
<th>Gender</th>
<th>Nationality</th>
<th>Activities</th>
<th>Age</th>
<th>Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Asian</td>
<td>Local</td>
<td>Arab</td>
</tr>
<tr>
<td>10-11</td>
<td>130</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-5</td>
<td>419</td>
<td>1</td>
<td>415</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9-10</td>
<td>401</td>
<td>0</td>
<td>393</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1161</td>
<td>1</td>
<td>1146</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 19: Al Mraba'a Plaza (Weekend)

<table>
<thead>
<tr>
<th>Time</th>
<th>Gender</th>
<th>Nationality</th>
<th>Activities</th>
<th>Age</th>
<th>Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Asian</td>
<td>Local</td>
<td>Arab</td>
</tr>
<tr>
<td>10-11</td>
<td>294</td>
<td>0</td>
<td>291</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-5</td>
<td>514</td>
<td>4</td>
<td>511</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9-10</td>
<td>557</td>
<td>1</td>
<td>557</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1365</td>
<td>5</td>
<td>1359</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 20: Al Muraba'a Plaza (zones classifications)

<table>
<thead>
<tr>
<th>Time</th>
<th>Zone A</th>
<th>Zone B</th>
<th>Zone C</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 - 11:00 am</td>
<td>101</td>
<td>148</td>
<td>92</td>
<td>341</td>
<td>13.5</td>
</tr>
<tr>
<td>4:00 - 5:00 Pm</td>
<td>153</td>
<td>213</td>
<td>53</td>
<td>419</td>
<td>16.6</td>
</tr>
<tr>
<td>9:00 - 10:00 Pm</td>
<td>158</td>
<td>195</td>
<td>48</td>
<td>401</td>
<td>15.9</td>
</tr>
<tr>
<td>Weekend</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 - 11:00 am</td>
<td>51</td>
<td>151</td>
<td>92</td>
<td>294</td>
<td>11.6</td>
</tr>
</tbody>
</table>

99
<table>
<thead>
<tr>
<th>Time Period</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00 - 5:00 Pm</td>
<td>69</td>
<td>31.4%</td>
</tr>
<tr>
<td>9:00 - 10:00 Pm</td>
<td>260</td>
<td>51.3%</td>
</tr>
<tr>
<td>Total</td>
<td>792</td>
<td>17.3%</td>
</tr>
</tbody>
</table>

On the other hand, in Zone A, the utilization ratio (31.4 %) is higher than in Zone C (17.4 %). Users who use Zone A (an open space facing the main street) can enjoy watching people and the dynamic movements in streets around the plaza. Also, the water fountains and the stage facing these fountains play an attractive role for users.

In addition, bus stop helps to increase the number of visitors (see figure 72). Zone C has the lowest usage ratio, because it is located on the edge of the plaza and there are no seats in this zone. Moreover, on weekends the total users are increased by 8.1 % percent. Asian laborers come from all around the city to visit and buy their needs and to meet friends as well.

![Figure 72: Bus stop point](image)

Regarding activities held in this plaza on weekends and weekdays, there is a little difference between the activities held in the plaza. Although the overall behavior patterns
and interpretations address a common spatial capacity of places, voids between them in daily patterns of use and reflect buffer zones between activities, and refer to the effective distribution and cohabitation of the diverse use in the place.

Figure 73 and 74 show the location and heat index of the users during both weekdays and weekends observation periods. A significant relationship is held between activities in the plaza and users' location. Table 19 shows a summary of users in this plaza in relation to zone and period. It indicates that the utilization ratio of users of Zone B is (51.3 %) and it represents the busiest zone and the highest ratio of use. The users of this plaza have more privacy and enclosure feeling.

![Figure 73: Weekday observation for the three periods](image-url)
Figure 74: Weekend observation for the three periods

Also the high density of trees branches helps to shade the seating chairs and improve the coolness of the zone (see figure 75). Shops and restaurants that face zone B are used frequently by the users (see figure 76). Figure 73 and 74 show the users density in zone B (red color represents high density). Moreover table 19 shows that number of users and visitors at the evening period is more than in the morning.
Moreover, Figure 73 and 74 show a large number of users selecting specific points. These points are more preferred for them. For example; in zone A, users gather near the bus station and the shaded seats. Additionally, in zone B users gather in the corridor and the...
stairs that is served by the nearby restaurant. Also users of zone C gather near one of the restaurants and one of the columns of advertisement posters.

In order to give a numeric value for this evaluation, the same procedure of evaluating the physical characteristics will be used. Since there are nine social dimension principles, each principle represents 11.11% of the total social evaluation. The numeric scalar has a maximum value of three so that the unit scale will be 3.70%. In this case the behavioral mapping will evaluate two of the social dimension principles which are the community character and the community cohesion, which represent 22.22% of the total social dimension principles. Table 20 summarizes the final evaluation of the two principles of this plaza.

<table>
<thead>
<tr>
<th>Principle</th>
<th>Evaluation</th>
<th>Value weight</th>
<th>Unit scale</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Character</td>
<td>Weakly achieved</td>
<td>1</td>
<td>3.70%</td>
<td>3.07%</td>
</tr>
<tr>
<td>Community Cohesion</td>
<td>Weakly achieved</td>
<td>1</td>
<td>3.70%</td>
<td>3.07%</td>
</tr>
</tbody>
</table>

### 4.3.1.2 Al Ain Town Square

The total number of users during the observation time is 528 users. This number is divided into 247 users on weekdays and 281 users on weekends (see Table 21 & Figure 77 & 78). 78.0% of users are males (412 people) while females represent 22.0% of total users (116 people). This ratio is reasonable comparing to the ratio of females visiting Al Muraba’a plaza. However the mixture of shops and goods serve different category.
Table 22: Al Ain Town Square observation (summary table for total weekend and weekday visitors)

<table>
<thead>
<tr>
<th>Time</th>
<th>Gender</th>
<th>Nationality</th>
<th>Activities</th>
<th>Age</th>
<th>Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Asian</td>
<td>Local</td>
<td>Arab</td>
</tr>
<tr>
<td>Total</td>
<td>412</td>
<td>116</td>
<td>242</td>
<td>241</td>
<td>0.2</td>
</tr>
<tr>
<td>Percent</td>
<td>78.0</td>
<td>22.0</td>
<td>45.8</td>
<td>44.1</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Figure 77: Town Square Plaza statistics A

Figure 78: Town Square Plaza statistics B
The collective data shows that the Asian community has the highest ratio (45.8%). It is noted that the percentage of Arabs is increased in this plaza (45.6%) (See figure 79). Females oriented shops and the availability of cafes and restaurants are the reason of the high percentage of Arabs presence. Young Arabs and Locals prefer to spend more time in cafes watching matches and playing cards. 8.3% of users are locals and most of them are females. Basically most of the users 52.8% come with their friends while 18.6% of users come with their families and 28.6% of the visitors come alone.

This plaza as discussed before is integrated with the surrounding buildings. The increase of females’ presence ratio is caused by the availability of some shops and goods that attract females and families. For example, tailoring shops, fabrics shops, accessories, gifts shops, salon, restaurants and other services attract females and families (see figure 80).
On the other hand, this plaza is located next to a high level apartment complex (Al Mada complex) and this increases the number of families (see figure 81).

Figure 80: Multi shops that attract females

Figure 81: Al Mada complex from the Eastern orientation

The majority of users are young people (25 - 35 years). They represent (63.8 %). Others are from 35 to 45 years old and they represent (19.5 %). The other users represent only (9.4%). The interaction of kids in the place is clear, especially in the open area where they can play and skate.

The percentage of kids is 12.1% and it is an indication of the place diversity. Only 4.5 % represents the ratio of other ages' categories. Regarding activities, more than half of the users prefer to sit (60.2%) because most of them like to watch the musical fountains and their kids playing around. Moreover, 30.5 % of the users like to stand in this plaza and 9.1 % of the users come for shopping and only 0.2 come for eating.

If we compare weekends to weekdays, each of table 22 and 23 shows almost the same percentage of males and female, whether it is a weekday or a weekend. Also the number of Asian community and Arabs are the same too. For local users the weekend ratio decreases approximately a half of the weekdays' ratio (5.3 %) on days including activities.
in the plaza. The two tables show that there are no significant differences regarding the attendance of age groups and the coexistence.

Table 24 shows that the maximum number of users during the evening period (9:00 pm to 10:00 pm) on both weekdays and weekends. Also this table shows that zone A has the maximum usage (87.3 %), then zone C (8.5 %) comes, and finally zone B (4.2 %). Chiefly the usage percentage of this place on weekends is higher than that on weekdays (6.4 %). This is caused by the presence of a greater number of visitors to see the musical fountains and for shopping as well.

Table 23: Al Ain Town Square - weekdays observation

<table>
<thead>
<tr>
<th>Time</th>
<th>Gender</th>
<th>Nationality</th>
<th>Activities</th>
<th>Age</th>
<th>Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Asian</td>
<td>Local</td>
<td>Arab</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-11</td>
<td>45</td>
<td>4</td>
<td>34</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Percent</td>
<td>91.8</td>
<td>8.2</td>
<td>69.4</td>
<td>4.1</td>
<td>26.5</td>
</tr>
<tr>
<td>4-5</td>
<td>55</td>
<td>23</td>
<td>36</td>
<td>16</td>
<td>26</td>
</tr>
<tr>
<td>Percent</td>
<td>70.5</td>
<td>29.5</td>
<td>40.2</td>
<td>20.5</td>
<td>33.3</td>
</tr>
<tr>
<td>9-10</td>
<td>91</td>
<td>29</td>
<td>42</td>
<td>11</td>
<td>67</td>
</tr>
<tr>
<td>Percent</td>
<td>75.8</td>
<td>24.2</td>
<td>33.0</td>
<td>9.2</td>
<td>55.8</td>
</tr>
<tr>
<td>Total</td>
<td>191</td>
<td>56</td>
<td>112</td>
<td>29</td>
<td>106</td>
</tr>
<tr>
<td>Percent</td>
<td>77.3</td>
<td>22.7</td>
<td>45.3</td>
<td>11.7</td>
<td>42.9</td>
</tr>
</tbody>
</table>

Table 24: Al Ain Town Square - weekend observation

<table>
<thead>
<tr>
<th>Time</th>
<th>Gender</th>
<th>Nationality</th>
<th>Activities</th>
<th>Age</th>
<th>Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Asian</td>
<td>Local</td>
<td>Arab</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-11</td>
<td>45</td>
<td>25</td>
<td>47</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>Percent</td>
<td>64.3</td>
<td>35.7</td>
<td>67.1</td>
<td>4.3</td>
<td>28.6</td>
</tr>
<tr>
<td>4-5</td>
<td>62</td>
<td>23</td>
<td>47</td>
<td>8</td>
<td>29</td>
</tr>
<tr>
<td>Percent</td>
<td>72.9</td>
<td>27.1</td>
<td>55.3</td>
<td>9.4</td>
<td>34.1</td>
</tr>
</tbody>
</table>

108
Figure 82 and 83 show the heat index of this plaza. Large number of users select zone A to sit and watch the fountains. The red color represents the high density of users in zone A. During the different periods of observations it is clearly observed that zone A is the most usable zone. Additionally, the black dots represent some condensed points of the users. These points have an advance feature than other places in the plaza. For example, in zone A users come and sit on the granite stages to watch the fountains and their kids play in the open area.
Figure 82: Al Ain Town Square weekday observation for the three periods

Figure 83: Al Ain Town Square weekend observation for the three periods
Table 25 shows the final evaluation value of both the community character and community cohesion. The reasonable ratios of all observed categories allow more diversity and social interaction at the place, and this result is the strongly achieved value given about both the community character and the community cohesion principles.

Table 26: Evaluating the community character and community cohesion of Town Square Plaza

<table>
<thead>
<tr>
<th>Principle</th>
<th>Evaluation</th>
<th>Value</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>weight</td>
<td>Unit scale</td>
</tr>
<tr>
<td>Community Character</td>
<td>Strongly achieved</td>
<td>3</td>
<td>3.70 %</td>
</tr>
<tr>
<td>Community Cohesion</td>
<td>Strongly achieved</td>
<td>3</td>
<td>3.70 %</td>
</tr>
</tbody>
</table>

### 4.3.1.3 Gold Souq Plaza

436 people are observed in Gold Souq Plaza. The total number of users is divided as follows: 220 persons on weekdays and 216 persons on weekends (398 males and 38 females) (see table 26 and figure 84 & 85). Unlike Al Muraba Plaza, the number of Arab users is clearly more. Most of the female users come with their families who live near this plaza, while males come from different places of the city especially those who work nearby the plaza.

Table 27: Gold Souq Plaza (summary table for total weekend and weekday visitors)
Moreover, the collected data show that the Asian community has the highest ratio (63.3%). It is noted that the percentage of Arabs increased in this plaza (35.1%). The locals ratio is the lowest one among all users (1.6% - only 7 people) (see figure 86 C). Most of the users visiting this place with their friends (64.4%) while (26.6%) of the users come alone. As for families, (8.9%) of the visitors come with their families.
Like the two other plazas, most of the users are young people between (25-35 years) and they represent (46.1%). The second category is aged between 35 to 45 years and they represent (35.6%). The third category is the under 18 category and they represent (7.8%). The other users' ages represent only (10.6%) (See table 26). These ratios clarify the diversity of different age categories. The interaction of the kids with the place is clear, especially in Zone C where they can play football easily.

The activities practiced by the users in this place are; (85.8%), sitting; (11.5%), standing; (2.3%), relaxing; and (0.5%), eating. One of the things that draw the attention is relaxing and sleeping by some Asian laborers in this plaza. This issue distorted the views for the other visitors. There are little differences in the percentages between the weekdays and weekends (see table 27 and 28).
Table 28: Gold Souq Plaza (Weekday observation)

<table>
<thead>
<tr>
<th>Time</th>
<th>Gender</th>
<th>Nationality</th>
<th>Activities</th>
<th>Age</th>
<th>Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Asian</td>
<td>Local</td>
<td>Arab</td>
</tr>
<tr>
<td>10-11</td>
<td>43</td>
<td>37</td>
<td>37</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Percent</td>
<td>97.7</td>
<td>2.3</td>
<td>84.1</td>
<td>0.0</td>
<td>15.9</td>
</tr>
<tr>
<td>4-5</td>
<td>70</td>
<td>50</td>
<td>50</td>
<td>0</td>
<td>36</td>
</tr>
<tr>
<td>Percent</td>
<td>91.9</td>
<td>8.1</td>
<td>61.8</td>
<td>0.0</td>
<td>38.2</td>
</tr>
<tr>
<td>9-10</td>
<td>71</td>
<td>17</td>
<td>45</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Percent</td>
<td>83.1</td>
<td>16.9</td>
<td>50.0</td>
<td>3.3</td>
<td>46.7</td>
</tr>
<tr>
<td>Total</td>
<td>195</td>
<td>132</td>
<td>60.0</td>
<td>3.1</td>
<td>38.6</td>
</tr>
<tr>
<td>Percent</td>
<td>98.6</td>
<td>11.4</td>
<td>60.0</td>
<td>1.4</td>
<td>38.6</td>
</tr>
</tbody>
</table>

People frequently select comfortable facilities in specific regions, depending on the activities they plan to be engaged in. The observation results reveal a close correlation between the environmental facility location and the comfortable facility location. In the morning observations users are distributed equally in the plaza, but in the afternoon and evening period visitors prefer to be in zone B & C (see table 29).
Families who live near the plaza gather in zone C where kids can play football and move easily. On the other hand, both of B & C zones contain more benches than does zone A. Benches there have more utilization ratio, indicating that these benches are generally efficient. The availability of one takeaway hot drink and parking near B & C zone helps to increase the density of users.

Moreover, Figure 87 and 88 show the different usages during weekdays and weekends. The percentage of users on weekdays is 46.8 % while 53.2 % come on weekends, but the heat index figures show that a large number of users select specific points in zones B & C. These points have an advance features. Furthermore, the users of zone A are focused mainly on the benches surrounding the fountain.

<p>| Gould Souq Plaza (Weekday Observation - Unit is Person) |
|---------------------------------------------|-------------|</p>
<table>
<thead>
<tr>
<th><strong>Time</strong></th>
<th><strong>Zone A</strong></th>
<th><strong>Zone B</strong></th>
<th><strong>Zone C</strong></th>
<th><strong>Total</strong></th>
<th><strong>Percent</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weekday</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 - 11:00 am</td>
<td>23</td>
<td>18</td>
<td>3</td>
<td>44</td>
<td>10.1</td>
</tr>
<tr>
<td>4:00 - 5:00 Pm</td>
<td>36</td>
<td>29</td>
<td>21</td>
<td>86</td>
<td>19.7</td>
</tr>
<tr>
<td>9:00 - 10:00 Pm</td>
<td>43</td>
<td>31</td>
<td>16</td>
<td>90</td>
<td>20.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>180</td>
<td>168</td>
<td>88</td>
<td>436</td>
<td></td>
</tr>
<tr>
<td><strong>Percent</strong></td>
<td><strong>41.3</strong></td>
<td><strong>38.5</strong></td>
<td><strong>20.2</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 87: Gold Souq Plaza weekday observation for the three periods

Figure 88: Gold Souq Plaza weekend observation for the three periods
Table 30 shows the final evaluation value of both community character and community cohesion. The reasonable ratios of all observed categories allow more diversity and social interaction at the place. These results strongly add a value to both the community character and the community cohesion principles.

Table 31: Evaluating the community character and community cohesion of Gold Souq Plaza

<table>
<thead>
<tr>
<th>Principle</th>
<th>Evaluation</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Character</td>
<td>Partially achieved</td>
<td>2 3.70% 7.40%</td>
</tr>
<tr>
<td>Community Cohesion</td>
<td>Partially achieved</td>
<td>2 3.70% 7.40%</td>
</tr>
</tbody>
</table>

4.3.1.4 A Comparison between all Plazas:

Table 31, shows clearly that the occupancy rate of Al Muraba‘a Plaza is the highest. The occupancy rate indicates the usage level and density of users. The other two plazas have a very low value of occupancy rate. Gold Souq plaza has 0.036 value of occupancy rate while the minimum value of occupancy rate is 0.036 for Al Ain Town Square.

Table 32: Occupancy rate for all plazas

<table>
<thead>
<tr>
<th>Name</th>
<th>No. of people</th>
<th>Plaza area (m²)</th>
<th>Occupancy rate (Person/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al Murab’a Plaza</td>
<td>2532</td>
<td>6585</td>
<td>0.385</td>
</tr>
<tr>
<td>Al Ain Town Square</td>
<td>528</td>
<td>14819</td>
<td>0.036</td>
</tr>
<tr>
<td>Gold Souq Plaza</td>
<td>436</td>
<td>11557</td>
<td>0.038</td>
</tr>
</tbody>
</table>

Table 33: Summary of observation of all plazas - at different periods

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>No. of people</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday</td>
<td>10-11</td>
<td>434</td>
<td>1628</td>
</tr>
<tr>
<td></td>
<td>4-5</td>
<td>583</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9-10</td>
<td>611</td>
<td></td>
</tr>
<tr>
<td>Weekend</td>
<td>10-11</td>
<td>402</td>
<td>1862</td>
</tr>
<tr>
<td></td>
<td>4-5</td>
<td>719</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9-10</td>
<td>741</td>
<td></td>
</tr>
<tr>
<td>Percent</td>
<td>Total users</td>
<td>Percent of total users</td>
<td>Gold Souq Plaza</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>95.4</td>
<td>3336</td>
<td>11.4</td>
<td>398</td>
</tr>
<tr>
<td>4.6</td>
<td>160</td>
<td>1.1</td>
<td>38</td>
</tr>
<tr>
<td>86.5</td>
<td>3023</td>
<td>7.9</td>
<td>276</td>
</tr>
<tr>
<td>1.5</td>
<td>54</td>
<td>0.2</td>
<td>7</td>
</tr>
<tr>
<td>11.9</td>
<td>415</td>
<td>4.4</td>
<td>153</td>
</tr>
<tr>
<td>0.1</td>
<td>4</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>49.3</td>
<td>1725</td>
<td>10.7</td>
<td>374</td>
</tr>
<tr>
<td>1.5</td>
<td>51</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>48.6</td>
<td>1698</td>
<td>1.4</td>
<td>50</td>
</tr>
<tr>
<td>0.3</td>
<td>9</td>
<td>0.1</td>
<td>2</td>
</tr>
<tr>
<td>0.4</td>
<td>13</td>
<td>0.3</td>
<td>10</td>
</tr>
<tr>
<td>3.1</td>
<td>108</td>
<td>1.0</td>
<td>34</td>
</tr>
<tr>
<td>1.9</td>
<td>66</td>
<td>0.3</td>
<td>9</td>
</tr>
<tr>
<td>58.6</td>
<td>2050</td>
<td>5.7</td>
<td>201</td>
</tr>
<tr>
<td>29.8</td>
<td>1041</td>
<td>4.4</td>
<td>155</td>
</tr>
<tr>
<td>6.2</td>
<td>216</td>
<td>1.0</td>
<td>36</td>
</tr>
<tr>
<td>0.4</td>
<td>35</td>
<td>0.0</td>
<td>1</td>
</tr>
<tr>
<td>21.0</td>
<td>735</td>
<td>3.3</td>
<td>116</td>
</tr>
<tr>
<td>74.7</td>
<td>2610</td>
<td>11.4</td>
<td>281</td>
</tr>
<tr>
<td>4.3</td>
<td>151</td>
<td>1.1</td>
<td>39</td>
</tr>
</tbody>
</table>

Table 3.4: Summary of observation of all plazas - Unit is person
Figure 89 and figure 90 show both weekdays and weekends observation periods. The total number of users on weekends is higher than the usage on weekdays and this is a routine issue, but some places during the weekends become denser than the weekdays and this refers to different characteristics of users. As an overall evaluation only one plaza has a dense and dynamic usage. This is related to different issues like surrounding facilities and services, surrounding compounds, bus stop points, physical features, legibility, parking availability, and safety and security.
4.3.2 Questionnaire

A questionnaire is distributed at the three plazas. The questionnaire is distributed randomly for the users. A total of 75 survey questionnaires are handed in (25 for each plaza) (see figure 90 A, B, C and D). Figure 91 and 92 show the responded questionnaire in terms of nationality and gender. Respondents' ages are categorized into four categories: 18-25 years old: 1.3%, 25-35 years old: 66.7%, 35-45 years old: 24.0%, and 45-55 years old: 8.0%.
Figure 90: Questionnaire

Figure 91: Nationality
This questionnaire helps to assess the user’s perception of the social dimension principles except the community character and cohesion principles, which have been evaluated in the behavioral mapping section. In this regard, list of questions are aimed to express the user’s perception of the social principles. Table 34 summarizes the main relationship between the principles and the questionnaire.

Table 35: The Main relationship between the principles and the questionnaire

<table>
<thead>
<tr>
<th>No</th>
<th>Principle</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Safety</td>
<td>Is this public space is safe?</td>
</tr>
<tr>
<td>2</td>
<td>Attractive</td>
<td>Is the design of this plaza attracting you to come here?</td>
</tr>
<tr>
<td>3</td>
<td>Walkability</td>
<td>Do you live near to this public space</td>
</tr>
<tr>
<td>6</td>
<td>Accessibility and Transportation Choice</td>
<td>The transit system used to come to this public space</td>
</tr>
<tr>
<td>7</td>
<td>Recreation</td>
<td>How often do you visit this plaza?</td>
</tr>
<tr>
<td>8</td>
<td>Affordability</td>
<td>Is the quality of the services provided in this public space serving all people categories?</td>
</tr>
<tr>
<td>9</td>
<td>Equity and participation</td>
<td>Is the provided facilities of this plaza encourage visiting the families?</td>
</tr>
</tbody>
</table>

Safety principle is related mainly to “Is this public space is safe?” question. Figure 93 shows the user’s perception of safety. The safety principle represents 11.11% of the total social principles value. The value of this principle will be equal to multiplying the user’s
satisfaction by the safety principle value. Table 35 summarizes the overall evaluation of the safety principle.

![Bar chart showing safety principle evaluation](image)

Figure 93: Is this plaza safe?

<table>
<thead>
<tr>
<th>Principle</th>
<th>Users satisfaction</th>
<th>Unit scale</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al Muraba’a Plaza</td>
<td>0.80</td>
<td>11.11 %</td>
<td>8.88 %</td>
</tr>
<tr>
<td>Town Square Plaza</td>
<td>0.84</td>
<td>11.11 %</td>
<td>9.33 %</td>
</tr>
<tr>
<td>Gold Souq Plaza</td>
<td>0.76</td>
<td>11.11 %</td>
<td>8.44 %</td>
</tr>
</tbody>
</table>

Table 36: Evaluating the safety principle of the three plazas

Regarding the attractiveness principle, "Is the design of this plaza attracting you to come here?" question is asked to investigate the user’s satisfaction of the attractiveness of the plaza (see figure 94). Similar to other social principles this principle represents 11.11 % from the total evaluation. Table 36 summarizes the overall evaluation of the attractiveness principle of the three plazas.
Walkability is related to “Do you live near to this public space?” question. This question is used to investigate whether this plaza is located within the walkability zone or it is not. Factors influencing walkability are the presence or absence and quality of footpaths, sidewalks or other pedestrian right-of-ways, traffic and road conditions, land use patterns, building accessibility, and safety among others. Figure 95 reveals that Al Murab'a Plaza has the highest number of user’s satisfaction followed by Al Ain Town Square and finally the Gold Souq plaza. In order to evaluate the final evaluation of the walkability principle, the satisfaction value will be multiplied with the principle percentage value, which is 11.11% (see table 37).
Figure 95: Do you live near to this plaza?

Table 38: Evaluating the walkability principle of the three plazas

<table>
<thead>
<tr>
<th>Principle</th>
<th>Users satisfaction</th>
<th>Unit scale</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al Muraba’a Plaza</td>
<td>0.60</td>
<td>11.11 %</td>
<td>6.66 %</td>
</tr>
<tr>
<td>Town Square Plaza</td>
<td>0.44</td>
<td>11.11 %</td>
<td>4.89 %</td>
</tr>
<tr>
<td>Gold Souq Plaza</td>
<td>0.40</td>
<td>11.11 %</td>
<td>4.44 %</td>
</tr>
</tbody>
</table>

The Accessibility and Transportation choice principle is related to “The transportations system used to come to this public space”. Figure 96 shows the transportations system used by the users. Al Muraba’a plaza has more choices than the other one. Also 60% of the users use the public transportations. However, A descriptive scailer will be used to evaluate this principle. Similar to the physical characteristics evaluation method, Table 38 summarizes the evaluation of the Accessibility and Transportation Choice principle.
Figure 96: The transit system used to come to this public space?

Table 39: Evaluating the accessibility principle of the three plazas

<table>
<thead>
<tr>
<th>Principle</th>
<th>Evaluation</th>
<th>Unit scale</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al Muraba’a Plaza</td>
<td>Strongly achieved = 3</td>
<td>3.70%</td>
<td>11.11%</td>
</tr>
<tr>
<td>Town Square Plaza</td>
<td>Partially achieved = 2</td>
<td>3.70%</td>
<td>7.40%</td>
</tr>
<tr>
<td>Gold Souq Plaza</td>
<td>Partially achieved = 2</td>
<td>3.70%</td>
<td>7.40%</td>
</tr>
</tbody>
</table>

Recreation principle associated mainly with the “How often do you visit this plaza?” question. Figure 97 show that Al Muraba’a has the maximum number of visits while the second is the Gold Souq Plaza and the lowest is the Town Square Plaza. Table 39 summarizes the overall evaluation of the Recreation principle.

Figure 97: How often do you visit this plaza?
Table 40: Evaluating the recreation principle of the three plazas

<table>
<thead>
<tr>
<th>Principle</th>
<th>Evaluation</th>
<th>Unit scale</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al Muraba'a Plaza</td>
<td>Strongly achieved = 3</td>
<td>3.70 %</td>
<td>11.11 %</td>
</tr>
<tr>
<td>Town Square Plaza</td>
<td>Partially achieved = 2</td>
<td>3.70 %</td>
<td>7.40 %</td>
</tr>
<tr>
<td>Gold Souq Plaza</td>
<td>Weakly achieved = 1</td>
<td>3.70 %</td>
<td>3.70 %</td>
</tr>
</tbody>
</table>

The Affordability principle is related to “Is the quality of the services provided in this public space serving all people categories?” question. In this respect, the Gold Souq plaza has the highest satisfaction ratio (84%), while Al Ain Town Square comes second (76%), and then Al Muraba’a plaza comes third (64%) (see figure 98). Table 40 summarizes the overall evaluation of the Affordability principle.

![Figure 98: Is the quality of the services provided in this public space serving all people categories?](image)

Table 41: Evaluating the affordability principle of the three plazas

<table>
<thead>
<tr>
<th>Principle</th>
<th>Users satisfaction</th>
<th>Unit scale</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al Muraba’a Plaza</td>
<td>0.64</td>
<td>11.11 %</td>
<td>7.11 %</td>
</tr>
<tr>
<td>Town Square Plaza</td>
<td>0.76</td>
<td>11.11 %</td>
<td>8.44 %</td>
</tr>
<tr>
<td>Gold Souq Plaza</td>
<td>0.84</td>
<td>11.11 %</td>
<td>9.33 %</td>
</tr>
</tbody>
</table>

Equity and participation principle is attributed to “Does the provided facilities of this plaza encourage the families to visit?” question. Figure 99 shows that the best plaza that encourages the equity and participation is the Gold Souq Plaza. Table 41 summarizes the overall evaluation of the Equity and participation principle of the three plazas.

127
Figure 99: Is the provided facilities of this plaza encourage visiting the families

Table 42: Evaluating the equity and participation principle of the three plazas

<table>
<thead>
<tr>
<th>Principle</th>
<th>Users satisfaction</th>
<th>Unit scale</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al Muraba'a Plaza</td>
<td>0.12</td>
<td>11.11 %</td>
<td>1.33 %</td>
</tr>
<tr>
<td>Town Square Plaza</td>
<td>0.76</td>
<td>11.11 %</td>
<td>8.44 %</td>
</tr>
<tr>
<td>Gold Souq Plaza</td>
<td>0.88</td>
<td>11.11 %</td>
<td>9.77 %</td>
</tr>
</tbody>
</table>
4.3.3 Time Lapse:

A one week time-lapse for all plazas spent as supportive evidences. Moreover, time-lapse aims to assess and visualizes gathering trends of users and crowds' behavior and to visualize the movement patterns. Place of the camera is selected carefully to cover almost the important sides of the plaza (See figure 100). Permission is taken from clinic owner in order to take a better angle view that covers zone A of Al Muraba’a plaza (see figure 101). The camera is placed in the south eastern corner of the Town Square Plaza. Finally, another camera is placed on the top of a car parked in the western parking adjacent to Zone B of Gold Souq Plaza (See figure 102).
Figure 101: Al Muraba'a plaza camera position

Figure 102: Town Square Plaza camera position
4.3.3.1 Al Muraba'a Plaza

The time-lapse of Al Muraba'a Plaza shows that the number of users is increased at the evening observation period. Also it shows that bus stop points have more density than other places. Figure N-103 and O-103 shows a high density of single labors using the place at evening observation period. Finally the following screen captures show a sequence of pictures representing a life model on weekdays.

Figure 103: Al Muraba’a Plaza time lapse
The percentage of users at the morning period is the lowest. Users start to visit the place at the afternoon period. Figure F-104 shows two Arabic female users come to enjoy their shopping. Kids who live next to this plaza come to play around 5:00 pm. Parents set on the available seats or stair steps watching their kids. The following screen captures shows a sequence of pictures represent a life model on weekdays.

Figure 104: Town Square Plaza time lapse
4.3.3.3  Gold Souq Plaza

Similar to other plazas, users prefer to use the place after 4:00 pm (see figure H-105). Users enjoy watching the fountains in the morning. In addition, they use zone B more than other zones, because it is adjacent to sweet coffee cafe. Users sit on seats or grass and enjoy their chatting and recreation. Residents use the place with their kids for recreation. The following screen captures show a life model on weekdays.

Figure 105: Gold Souq Plaza time lapse
4.3.3.4 A Comparison between all Plazas:

Questionnaire results highlighted some important issues related to social principles. The results show clearly that Al. Muraba’a Plaza has the lowest evaluation rate (57.45%) of the social principles. This is because it has some problems related to attractiveness, social character, social cohesion, and equity & participation principles. On the other hand, Town Square plaza has the highest evaluation rate (71.45%) because it has some mixture of services, shops and restaurants. Also it has a unique spatial character which gives the plaza a special identity. The mixture of citizens, nationalities and age categories give this plaza higher evaluation rate. Finally Gold souq plaza has in-between value (61.43%) and it has some problems related to attractiveness, walkability and recreation principles.
CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

The main purpose of this study is to evaluate the performance of the existing urban public plazas in Al Ain downtown. Therefore, this research studies essential issues related to plazas to improve usability and performance. Successful urban public spaces principles and local public realm design manual are utilized to prepare a successful and livable urban public plazas design principles list. The research literature review on a successful design of urban public space shows that a livable public space must comply with the physical characteristics and the social principles.

This research identified a variety of principles that support assessment tools at both the project design phase and the project operational phase. These principles carefully work to balance relationships between physical and social principles. In order to have a full view about the successful urban public spaces design, theory studies, and local design manual were analyzed and used to end up with a final framework (principles list) to create an urban public space design manual. This methodology allows comparing different researches and theories with the local practices and then extracting the overlapped principles as well as the messed one.

AD-PRDM is a planning tool that creates Urban Public Spaces of high quality, and it identifies the context of public realm planning. Moreover, it provides guide statement for all public realm development, and it illustrates concepts for community-wide public realm systems. This manual combines between the physical characteristics and the livability principles. However, the AD-PRDM principle comes in one group, which makes ambiguous understanding of its principles. The AD-PRDM raises two important
principles: The Environmental Stewardship and the Shared Ownership & Implementation.

Based on the above the common successful urban public space characteristics are; character (a place with its own identity), continuity and enclosure (where public and private spaces are clearly distinguished), quality of the public realm (a place with attractive and well-used outdoor areas), easy movement (a place that is easy to get to and move through), legibility (a place that is easy to navigate), adaptability (a place that can change easily), and diversity (a place with variety and choice). On the other hand, the livability principles are; safety, attractive, community character, community cohesion, walkability, accessibility and transportation choice, recreation, affordability and equity.

Using the final frame work is an effective tool for quality and application of successful design to an urban community. These integrated design principles related to various defining levels of a community, integrating its natural amenities with its urban public spaces and context. It can be used by any urban public space as a guide for developing a comprehensive successful urban design. Specific policies and strategies will vary with local conditions. Adopting some recommendations in a systematic manner will provide significant long term resource and monetary savings for the community and the city. The implementation of successful urban public spaces principles will require collaboration with government, civic organizations, private individuals and users.

Al Ain downtown Plazas have evolved into an important civic space, widely used by residents and visitors. This area presents a significant opportunity for enhancing the existing core activities, as well as providing a catalyst for further development in the downtown area. This thesis intends to fully integrate Al Ain Downtown Plazas into the
urban fabric of downtown, to achieve a high standard of urban and architectural design, and to create a safe civic space that serve the public.

Five main instruments are used for evaluating the physical characteristics and social principles, which include: aerial maps & drawings and photographs (for evaluating the physical characteristics), behavioral maps, questionnaires and time lapse photography (for evaluating the social principles).

The social behavior maps, generated by GIS software (cartographica) showed clearly the dramatic difference in visitors' use ratio. The system provides quantitative evidence that helps in drawing the comparisons, which shows the problems of the existing urban public plazas.

Three plazas with similar usage potential are selected (Al Muraba’a plaza, Al Ain town Square and Gold Souq plaza) in order to be evaluated. The criteria that were adopted for selecting these sites are: location in the downtown area, size of the urban public space, the daily use and integration with surrounding facilities. The results of the data analysis show that there are some problems associated with both physical and social principles. Table 42 and 43 show that the Town Square Plaza complies with 88.80% of the physical characteristics principles, while 71.45 % is for the social principles. The Gold Souq Plaza, complies with 77.70 % of the physical characteristics and 61.43% is for the social principles. Finally, Al Muraba’a plaza complies with 66.67% of the physical characteristics and 55.45% is for the social principles.
The headline conclusions from the study can be summarized as follows:

Table 43: Evaluation of Physical Characteristics of all plazas

<table>
<thead>
<tr>
<th>Principles</th>
<th>Al Muraba’a Plaza 16.65 point out of 100</th>
<th>Town Square Plaza 16.65 point out of 100</th>
<th>Gold Souq Plaza 16.65 point out of 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Character</td>
<td>5.56</td>
<td>11.1</td>
<td>11.1</td>
</tr>
<tr>
<td>Continuity and enclosure</td>
<td>11.12</td>
<td>16.65</td>
<td>5.55</td>
</tr>
<tr>
<td>Quality of the public realm</td>
<td>11.12</td>
<td>11.1</td>
<td>16.65</td>
</tr>
<tr>
<td>Ease of movement</td>
<td>11.12</td>
<td>11.1</td>
<td>11.1</td>
</tr>
<tr>
<td>Legibility</td>
<td>16.65</td>
<td>5.55</td>
<td>16.65</td>
</tr>
<tr>
<td>Adaptability</td>
<td>5.55</td>
<td>16.65</td>
<td>11.1</td>
</tr>
<tr>
<td>Diversity</td>
<td>5.55</td>
<td>16.65</td>
<td>5.55</td>
</tr>
<tr>
<td>Total</td>
<td><strong>66.67 %</strong></td>
<td><strong>88.8 %</strong></td>
<td><strong>77.7 %</strong></td>
</tr>
</tbody>
</table>

Sensitive points can support and improve the regeneration of Al Ain downtown public spaces by providing guiding recommendation. Concerning the physical characteristics problems, a plaza should reflect the character of its location and community users. Also it requires a program of use and a strong concept. A careful thought should be given to plaza’s principles functions and to its relationship with the adjacent land use and viewpoints. For example, Al Muraba’a plaza character can use a heritage decoration theme especially it’s adjacent to one of the old forts in UAE. Similarly, Gold Souq Plaza can use Islamic decoration theme because it is located next to one of the well-known mosques in Al Ain city (Shiekh Salama Mosque). Also it is located beside Gold Souq markets which usually designed as Islamic architectural in the gulf region. On the other hand, the functions of the plazas must be different from each other. Some of the plazas may act primarily as pedestrian nodes, enhancing the setting for the surrounding building and act as community gathering points.

The quality of the public realm principle associated with availability or lack of services, seats, lighting, parking and signage which influences people’s attitudes. New toilets and
other physical features can improve the time spend at the plaza which allows people to adapt with the place. Enclosure principle can be improved by making a clear boundary of the plazas and creating some private places. Al Muraba’a plaza can use steps or trees as barriers similar to those of the Gold Souq Plaza. This barrier helps to separate the plaza from the street and gives a sense of enclosure (see figure 105). Gold Souq plaza can use some design features like small wall barriers or trees in order to create a private places.

Concerning the ease of movement principle, a plaza should provide easy and direct access particularly for the elderly, disabled and young children. A clear pattern of movements helps to improve the flow of movements especially in the crowded area like
downtown. Linkages can be achieved or reinforced using the following devices: passages, bridges, steps/ramps, paving patterns and planting.

On the other hand, plaza should be linked to the other surrounding urban public spaces, as well as interior spaces, such as lobbies, to create a dynamic pedestrian network. Such links will make the plaza more useful and provide a more dynamic and coherent urban environment. In this regard, creating a clear passages and walkways will help improving the linkage between different plazas and areas (see figure 107). Gould Souq plaza can have a better linkage to Al Ain Town Square by using a wide pedestrian bath way penetrates throw Shiekha Salama Mosque (see figure 109).

The best practice to improve legibility principle is to locating the plaza at or as close as possible to street level. Indeed, Town Square plaza is surrounded by four stories buildings which block the view from the main streets. In this regard, the best solution is to make clear paths from the main streets whether by removing one building block or by creating wide pedestrian paths from the coroners. Also the mosque pathway suggestion can help to create a clear view from the southern orientation (see figure 108). Al Muraba’a Plaza and Gold Souq plaza have a clear legibility where they located close to one of the main streets in Al Ain city (The main street).
Regarding the adaptability principle, all plazas are limited expansion. Also, since there are private buildings surrounded all the plazas, the opportunity to expand are limited. Removing some of these building needs a strong decision by the Municipalities and decision makers. Thus, it is important to take into consideration the future expansion in the future projects.

On the other hand Al Muraba’a plaza and the Gold Souq plaza have problems of lack of services provided in the place. Inadequate provision of services can separates some groups from others. Changing the target of the shops and restaurants of Al Muraba’a plaza to different oriented groups can help to improve the adaptability. On the other hand, increasing number of cafes, restaurants and kids playground can help the adaptability of the Gold Souq plaza. Al Ain Town square has a better adaptability than other plazas (16.65 %) because it has variety of choices of markets and restaurants.
Table 42 shows the diversity problems in both Al Muraba’a plaza and the Gold Souq plaza. Provision of multi-oriented shops, which serves different categories, may help to increase the diversity of users. Also providing a kids playground square in the plazas will increase the number of families visiting the place, and will finally increase the diversity of the place. On the other hand, it should provide various and adaptable plazas that have visual diversity. A variety of scales, massing and architectural style can be applied in a thoughtful manner.

Problems associated with social principles are clearly noticed in all plazas. Table 43 summarizes the evaluation of the social characteristics of all plazas. The downtown area plazas provide social arenas for all kinds of people; residents, workers, shoppers, visitors, and children. Indeed, providing the design guidelines of the space and other urban design manuals is not enough to create livable urban public spaces. Other factors may affect the social interaction and the diversity of the places. The social principles can’t easily evaluate but the questionnaire may help to extract the users’ perceptions.

Table 44: Evaluation of Physical Characteristics of all Plazas

<table>
<thead>
<tr>
<th>Principles</th>
<th>Al Muraba’a Plaza</th>
<th>Town Square Plaza</th>
<th>Gold Souq Plaza</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11.11 point out of 100</td>
<td>11.11 point out of 100</td>
<td>11.11 point out of 100</td>
</tr>
<tr>
<td>Safety</td>
<td>8.88</td>
<td>9.33</td>
<td>8.44</td>
</tr>
<tr>
<td>Attractive</td>
<td>5.11</td>
<td>3.33</td>
<td>3.55</td>
</tr>
<tr>
<td>Walkability</td>
<td>6.66</td>
<td>4.89</td>
<td>4.44</td>
</tr>
<tr>
<td>Community character</td>
<td>3.07</td>
<td>11.11</td>
<td>7.40</td>
</tr>
<tr>
<td>Community cohesion</td>
<td>3.07</td>
<td>11.11</td>
<td>7.40</td>
</tr>
<tr>
<td>Accessibility and Transportation Choice</td>
<td>11.11</td>
<td>7.40</td>
<td>7.40</td>
</tr>
<tr>
<td>Recreation</td>
<td>11.11</td>
<td>7.40</td>
<td>3.70</td>
</tr>
<tr>
<td>Affordability</td>
<td>7.11</td>
<td>8.44</td>
<td>9.33</td>
</tr>
<tr>
<td>Equity and participation</td>
<td>1.33</td>
<td>8.44</td>
<td>9.77</td>
</tr>
<tr>
<td>Total</td>
<td>57.45</td>
<td>71.45</td>
<td>61.43</td>
</tr>
</tbody>
</table>
Safety is an important issue for the users. Plaza will be unsuccessful if it is not well used due to lack of safety. The design of a plaza should provide a safe design such as invulnerable space, clear sightlines, good lightings and physical setting. The recommended solution for Al Muraba’a safety problem is to fix small barriers around the plaza. This barrier may help to keep users far away from the crowded streets (see figure 114). For The Gold Souq plaza, street hubs with zebra lines may decrease cars speed and improve pedestrian pathways safety (see figure 109). Moreover, increasing the floodlights can help to improve the user’s surveillance and provide a clear vision at evening time (see figure 110). Finally security guards availability helps to create a sense of security and safety.

Figure 109: Proposal for street hubs at Gold Souq plaza
Moreover, a plaza should afford good visual surveillance opportunities within both of the space and along the edges. People need to feel secure and they usually avoid dark hidden corners and vacant places. A plaza should be designed to maximize opportunities for casual monitoring from outside and neighborhood (see figure 111).

Concerning the attractiveness principle, plaza should attract users by holding different activities and providing enjoyment features like chess tables, band stage, cafes and fountains that encourage more people to use the space especially families and kids (see figure 112). It also should provide sense of comfort, and availability of seats. In addition,
it should have natural elements. However, different design themes of plazas encourage visitors to visit these places frequently in order to satisfy their users' minds.

Moreover, creating a clear pattern of movements and enjoyable paths can help to improve walkability. Clear paths can be used from the main street to Al Ain town square. This can help the plaza to be seen from the main street and improve walkability. The plaza objectives, movements, building arrangement, street scale, materials and circulation patterns are all essential for developing plazas to improve the walkability (see figure 111). Public transportation and land use policy play an important role in walkability satisfaction, accessibility, and transportation choice principles.

The community character and cohesion problems are related to plaza management. Successful plazas are generally characterized by several activities generators. Al Muraba‘a plaza and Gold Souq plaza have a community interaction problem. In order to solve this problem there should be a good management program for activities to heighten the level of interaction and cohesion. For example, food, retail outlets, entertainment tools which attract users and encourage socializing relaxation and festivities. Good plaza management can include soliciting groups to activate the space, such as folk dancers, street theatre musicians and exhibitors (see figure 112).
In regard to accessibility, the Gold Souq plaza and Town Square plaza have lower evaluation. In order to increase the satisfaction value, plaza should provide easy and direct access particularly for the elderly, disabled and young children. Ramp slopes should not exceed 8.3 percent and handrails should be incorporated. Selection of surface materials should result in easy access for the elderly and disabled, and also discourage incompatible plaza activities such as skateboarders. Placement of planters, non-moveable seatings and handrails should further encourage easy wheelchair and pedestrian access, and should discourage the use of skateboards.

The satisfaction level of the recreation principle of Gold Souq plaza is too low. In order to improve this value, a plaza which is furnished with a variety of amenity features encourages general public to use it and it creates a sense of liveliness and excitement. Art work should provide a focal point for the plaza to become an integral component of the overall design of the plaza. Bike racks, drinking fountains and waste receptacles are practical and essential amenities. Also good seating is important to plaza users. Without it, fewer people will stop to use the space (see figure 112).

Figure 113: Different seating layout

Affordability satisfaction level can be improved by providing good plaza management program. This program should be provided, with the emphasis on maintenance, operation
and activity programming. This not only affects how a plaza looks like, but also it affects how well it can attract and adapt users. By keeping the grounds clean, maintaining the lighting, seating and surface areas, providing seasonal planting and by operating a food service, the management will create a safe, lively and attractive space. Thus, providing the needed services for all categories will increase level of satisfaction.

Finally, equity and participation of residents, workers, shoppers, visitors, and children during the design process, may help in making decisions and management should be taken into consideration. Urban public spaces regeneration must be a major aspect of government policy and has the potential for much improvement in the public realm.

**In general, some important points can help improve the existing situation of the urban public spaces such as:**

- Problems must be studied from its core.
- Site selection and land use policies are important when you design urban public spaces.
- Providing attractive and new features is not enough to design a successful place. Moreover, a variety of scales, massing and architectural style can be applied to improve attractiveness.
- Providing program of use and activities (management program) with a strong concept will improve community character and cohesion. Researcher suggests establishing a department for managing the plaza activities and programs. This will improve the community character and cohesion.
- Sharing decisions with users can help more successful urban public spaces.
- Functions of the plazas must be different from each other. A variety of scales, massing and architectural style can be applied to improve attractiveness.
- Wide pedestrian pathways can improve better walkability
- Increase entertainment options can improve recreation and affordability.
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### Visitor's information:

1. **Gender:**
   - □ Male
   - □ Female

2. **Age:**
   - □ <18
   - □ 18-25
   - □ 25-35
   - □ 35-35
   - □ 45-55
   - □ >55

3. **Nationality:**
   - □ Local
   - □ Arab
   - □ Asian
   - □ Western

4. **Coming with**
   - □ Alone
   - □ Family
   - □ Friends

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### Time spent:

5. **How often do you visit this public space?**
   - □ Weekly
   - □ Monthly
   - □ Less Than Monthly
   - □ First Visit

6. **How time do you spend here usually?**
   - □ <10 min
   - □ 10-30 min
   - □ 30-60 min
   - □ 60-90 min
   - □ 90-120 min
   - □ >120 min

7. **Why do you visit this park?**
   - □ recreation (seating)
   - □ walking
   - □ relaxation
   - □ eating
   - □ shopping

8. **Do you visit other public spaces?**
   - □ Yes
   - □ No

9. **Do you live near this public space?**
   - □ Yes
   - □ No
Physical features

10. Do the design features attract you to visit these public spaces?
   □ Yes □ No

11. Does the design respect the local culture? What is your preferred design?
   □ Yes □ No

12. Does this public space provide good seating area? (shading, comfort place, view etc.)
   □ Yes □ No

13. Is the area of this public space comfortable?
   □ Yes □ No

14. Is the space well maintained? (Tiles, lighting, trash removed, etc.)
   □ Yes □ No

Livability

15. Is this public spaces safe?
   □ Yes □ No

16. Are these public spaces comfortable?
   □ Yes □ No

17. Are these public spaces inclusive? (designed for all people categories)
   □ Yes □ No

18. Is there any diversity of activities in this public space? What kind of activities do you like?
   □ Yes □ No

19. Is this public space encouraging social interaction? What kind of activities?
   □ Yes □ No

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20. Does the diversity encourage / discourage you to visit this place again?

☐ Encourage       ☐ Discourage       ☐ Neutral

21. Do you like to interact with other people or other nationality?

☐ Yes       ☐ No

22. What kind of activities can attract visitors?

☐ Yes       ☐ No

23. If you are married, do you mind to visit this public space with your family? Why?

☐ Yes       ☐ No

Urban Structure:

24. Does this public space have good accessibility?

☐ Yes       ☐ No

25. Does this public space have good commercial activities, such as markets and open-air souqs, extend along streetscapes to increase their visibility and accessibility?

☐ Yes       ☐ No

26. Does this public space have good visual linkages?

☐ Yes       ☐ No

27. Do the design features attract you to visit these public spaces?

☐ Yes       ☐ No

28. What is the means of transportation used to come to this public space?

☐ Walking   ☐ Bicycle       ☐ Car       ☐ Public transportation

29. Does public transportation play significant role in the use?

☐ Yes       ☐ No
30. Is this public space connected with other public spaces?

☐ Yes  ☐ No

31. Is this public space connecting with surrounded facilities?

☐ Yes  ☐ No

32. Is the place of this public space good?

☐ Yes  ☐ No

33. Is this public space legible?

☐ Yes  ☐ No

34. Do you live near this public space?

☐ Yes  ☐ No

35. Do other factors affect diversity and livability of this public space?

☐ Yes  ☐ No

Services:

36. Does the quality of the services provided in this public space serve all people categories?

☐ Yes  ☐ No

37. Do the services encourage you to stay more time in this public space?

☐ Yes  ☐ No

38. Are the services in malls better than the services provided by this public space?

☐ Yes  ☐ No

39. Do malls affect the diversity and livability of public spaces?

☐ Yes  ☐ No

40. What kind of services may encourage more people to visit this space?

☐ Yes  ☐ No  
Where do you go for special interaction?
Questionnaire (Public Spaces Survey): प्रश्नावली

Your Name (optional): 
Phone or Email Address (optional):

Section 1 - Visitor information:

1. Gender: 
   □ Male □ Female

2. Age: उम्र
   □ <18 □ 18-25 □ 25-35 □ 35-45 □ 45-55 □ >55

3. Nationality: राष्ट्रीयता
   □ Local □ Arab □ Asian □ Western

Section 2 - General information:

4. Do you live near this public space?
   क्या आप इस सार्वजनिक स्थान के पास रहते हैं?
   □ Yes □ No

5. Why do you visit this plaza?
   आप इस चौक पर क्यों आते हैं?
   □ Recreation (seating) □ Walking □ Social Interaction □ Eating □ Shopping

6. How often do you visit this public space?
   कितनी बार आप इस सार्वजनिक अंतरिक्ष में यात्रा करते हैं?
   □ Daily □ Weekly □ Monthly

7. How long do you stay here usually?
   कितना समय आप आमतौर पर बसे करते हैं?
   □ <10 min □ 10-30 min □ 30-60 min □ 60-90 min □ 90-120 min □ >120 min

8. What is the transportation means you used to come to this public space?
   पारगमन प्रणाली इस सार्वजनिक स्थान के लिए आया करते थे?
   □ Walking □ Bicycle □ Car □ Public transportation
9. Is this public space connected with surrounded facilities?
   इस सार्वजनिक स्थल के लिए विस्तृत सेवाएं के साथ जोड़ी है?

   □ Yes   □ No

10. Is this public space dynamic?
    यह सार्वजनिक स्थल है गतिशील है?

    □ Yes   □ No   □ Only on weekends

11. Is this public space safe?
    क्या यह सार्वजनिक स्थल सुरक्षित है?

    □ Yes   □ No

12. Does the quality of the services provided in this public space serve all people categories?
    इस सार्वजनिक स्थान में सभी लोगों के लिए उपलब्ध उपकरण का मूल्यांकन करते?

    □ Yes   □ No

13. Do the provided facilities of this plaza encourage visiting the families?
    इस प्लाज़ा के उपलब्ध सुविधाओं परिवारों का दौरा प्रोत्साहित करते है?

    □ Yes   □ No

14. Does the design of this plaza attract you to come here?
    इस प्लाज़ा का डिजाइन आप को आकर्षित करते है?

    □ Yes   □ No
Planner Lyla Al Rashidy Interview:

Q: Is there any suggestion to improve the urban public spaces?

Architect Lila: Yes, there are studies and developing projects for the downtown area done by Al Ain Municipality planners and Abu Dhabi planning councils. One of the studies is concerned with the Asian laborers crowded phenomena especially on weekends. The coexistence of this category harasses other categories. Visitors of downtown area think at first glance that there are demonstrations in this area. Studies show that most of the Asian laborers come from the industrial areas in Al Ain city, because of the surrounding shops and services that serve this category (low income people).

In this light, a study provided by Al Ain Town planning aims to solve the Asian laborers' congestion in these areas, especially in the plazas. The goal of this study is to find a balance between communities in the downtown public spaces by minimizing the number of Asian laborers visitors. The solution was to build a laborers' campus far away from the city that has an entertainment facilities and other services like low income shops and restaurants. This solution is still under study by the senior management.

Q: If there is a new plaza, which is responsible of designing this plaza?

Architect Lila: Al Ain municipality sectors ask Al Ain town planning to provide an urban public space. Al Ain town planning sector coordinates with the UPC to have the location approval. For the design, Al Ain town planning sector is committed to the ADPRM and other design manuals that help companies to design these places.
Q: Are there any future plans for this region in Al Ain 2030 Master plan? What are these plans?

Architect Lila: Yes, the plans are to build a new high dense campus for the Arab and local communities to balance the communities in the downtown area. Also to change the building permits from private house to commercial buildings, which increase the density of the downtown plaza.

Q: Do you visit any of downtown plazas? If not, Why? And how can we attract locals to visit these plazas?

Architect Lyla: No, because it has low quality of services that increases the ratio of Asian laborers there. Regarding attractiveness factors for locals, I think providing a high quality of restaurants and cafes similar to the walk project in Dubai will attract the locals.
ملخص

هذه الدراسة تدرس المشاكل الفيزيائية والاجتماعية الموجودة في الساحات العامة في منطقة وسط المدينة في مدينة العين. في الحقيقة هذه الساحات تمثلت في احتياجات المجتمع المختلفة ومنها التفاعل والترفيه الثقافي والاجتماعي، ولكن الوضع الحالي لهذه الساحات يعاني من مشكلة رئيسية وهي أنها تستخدم فقط من مجموعة معينة من المجتمع، هذه الدراسة تهدف لوضع هيكل يضم مجموعة من العناصر الفاعلة التي تعمل على إنجاح فعالية وكفاءة الساحات العامة في مدينة العين.

هذا الهيكل يضم بعدان رئيسان هما بعد الفيزيائي والبعد الاجتماعي، وهذان البدعان يضمنان مجموعة من العناصر والمؤشرات التي تؤثر في نجاح الساحات العامة. استخدمة هذه الدراسة تحليل القيادة لتقسيم هذه العناصر والمؤشرات، وتم اختيار ثلاث ساحات رئيسية في مدينة العين وذلك لتقييمها من خلال الهيكل الموضوع، استخدمت مجموعة من الأدوات لجمع المعلومات الخاصة بالبعد الفيزيائي منها: الصور الجوية والرسومات والصور، ومن الناحية الأخرى تم استخدام خرائط السلاك الاجتماعي والاستبيانات وذلك لجمع المعلومات المتعلقة بالبعد الاجتماعي. وفي هذا الإطار تم استخدام برنامج يعمل بنظام نظم المعلومات الجغرافية cartographica & Cartomobile على استدلال الخرائط السلكية للمستخدمين بالإضافة لتخزين بياناتهم حسب تصنيفات معينة.

تقوم هذه الدراسة على تحليل الخرائط السلكية وبيانات المستخدمين للساحات المختلفة ومقارنتها مع بعضها البعض، هذه المقارنة تسمح بصورة معاودة وجدية الساحات العامة في المدينة من الناحية الفيزيائية والاجتماعية، بالإضافة لاستكشاف المشاكل الموجودة في هذه الساحات ليتم وضع مجموعة من التوصيات والحلول لمعالجة هذه المشاكل، وخصوصاً مايخص البعد الاجتماعي مثل استبعاد جميع الالكالات الثقافية والتراثية المجتمعية، وذلك لضمان التفاعل الثقافي والاجتماعي بالإضافة لمساعدة المصممين والمتخصصين في تصميم ساحات عامة ناجحة وفعالة.
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قسم الهندسة المعمارية
كلية الهندسة
جامعة الإمارات العربية المتحدة

عنوان الرسالة:

تقييم الأداء الخاص بالساحات العامة في منطقة وسط مدينة العين
من الناحية الفيزيائية والاجتماعية

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تقييم الأداء الخاص بالساحات العامة في منطقة وسط مدينة العين من الناحية الفيزيائية والاجتماعية

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 رسالة مقدمة لاستكمال مطالبات الحصول على درجة ماجستير العلوم في الهندسة المعمارية

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يونيو 2013