

# **Functional Efficiency of Urban Spaces: Karbala City Center as a Case Study**

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## Abstract

The research aims to shed light on the reality of the functional efficiency of the urban spaces in Karbala city center, due to the fact that these spaces play a very important role in the movement of millions of visitors during the large pilgrims, such as Zeyart AL-Arbaeen and Al-Sha'baniyah visit, and others.

As a general concept in the planning field, spaces are considered as part of the urban fabric of any city, whether large or small; therefore, they constitute the natural outlet for the city as well as they are considered as the most important physical components in the city that has visual (environmental) and aesthetic effects. Therefore, this research investigates some international models in this field, through which a set of functional requirements that can contribute to reaching a conclusion of functional values for the urban spaces within the city are identified. They are demonstrated by indicators that are examined and tested on the study area, and these indicators are (social interaction, accessibility, spatial organization, and spatial compatibility).

One of the most important conclusions of this research is that the creation of four new spaces in the study area (Baghdad Square, Sha'baniyah Square, Martyrs Square, and Al-Alqami Square) was due to the actual need for places for visitors to gather, especially after the increase in the large number of visitors during the last years. Moreover, these Squares represent a meeting point for visitors with local residents for cross-cultural contact and knowledge exchange.

The area of spaces has increased at the expense of residential use, as many of the houses close to the area between the two holy shrines were removed to expand the area. This has led to the creation of spaces for urban interaction and daily social communication, largely from all local and foreign groups of people.

**Keywords:** Functional efficiency, urban space, urban agglomeration.

## Introduction

Public urban space constitutes the most important component of any urban fabric, as it represents the focus of attention for geographers, planners, architects, and sociologists (Khawaja, p. 8, 2015). Urban space has become necessary in the city that undergoes various transformations. The creation of these public spaces, which serves as an encouragement to all individuals to access them, is one of the criteria for the success of the city (UN: Habitat, p. 59, 2015).

In the West, public space was limited to the city, center squares, and church squares, which are almost always designed around a central monument. It should be noted that public urban space has existed since ancient times, especially in Greek and Roman cities, until the present time. However, highlighting, studying and analyzing this science, as well as discussing its importance in forming a general opinion of the individual towards power began in the second half of the twentieth century in Europe and then moved to the rest of the world (Khawaja, p. 8, 2015).

Lucretius believed that nature consists of bodies and space. Objects

move in space and take their positions. Aristotle developed the theory of place, which states that space is the (where) that is linked to man and his relationship with the physical environment, which achieves a sense of belonging (Ahmed, p. 3, 2020). It is identified by the facades of buildings and the floor of the city. It also contains the activities of the residents of this city and varies in several forms, including squares, gardens, and parks (Kounssellie, p. 146, 2013).

Urban space exists around us, and we encounter it every day during our daily activities. The term space is mainly used in geography, in addition to its use by architects, planners and philosophers (Kounssellie, 146). Spaces have several definitions in various sciences, as their definitions vary according to each science's point of view.

Krier identified the urban space as an external space that consists of two elements: the walls and the floor. He added that the clarity of the aesthetic values and engineering characteristics of the urban space helps to realize it, as it expresses an urban experience that contains people, interacts with them, and gives them a sense of containment within it (Krier, 1988, p174).

Urban spaces constitute one of the most important elements of cities' urban formation, as they represent the main areas for human communication, the practice of various human activities, and the accompanying availability of conditions for psychological and physical comfort for all parts of society by securing a complex mix of integrated activities and events (Dwaikat, p. 4, 2009).

Urban spaces are characterized as points of attraction in the urban fabric and are characterized by aesthetic and functional characteristics

for the purpose of people's enjoyment. They are also considered a national treasure and a high-value resource that must be preserved and sustained. Therefore, justice is necessary in distributing them in a way to guarantee that everyone receives their share and has the right to use them (Kounsselie, P. 148, 2013).

While Al-Hashemi indicated in his study of the functional efficiency of spaces that the efficiency of the spaces is deteriorating in terms of service, in addition to the loss of feeling, because they expel the youth and the elderly, and that 89.7% of these spaces' goers are from the category of children and adolescents, because they do not contribute to raising the degree of social interaction (Al-Hashemi, p. 183, 2010).

### The problem

The research problem attempts to answer the following question:  
Is there efficiency in distributing urban spaces in Karbala's city center?

### The Hypothesis

Ease of access, social interaction and spatial compatibility are indicators that contribute to enhancing the efficiency of the function of urban spaces in general and in city centers in particular.

## Research sources

The research relied on library sources and a field study conducted through a questionnaire that included five paragraphs:

1. The first paragraph: contains a group of questions, the answers to which reveal general information about the users.
2. The second paragraph: contains a group of questions, the answers to which reveal the behavior of individuals.
3. The third paragraph: contains a group of questions, the answers to which reveal the reality of the state of the elements of coordination.
4. The fourth paragraph: contains a group of questions, the answers to which reveal the answer to information related to the efficiency of spaces.
5. The fifth paragraph: contains a group of questions, the answers to which reveal the information about the spaces in the study area.

## Research Methodology:

In order to achieve the planning goal of revealing the dimensions of the relationship between man and place and effectiveness in presenting and discussing the research topic, the study adopted more than one approach, starting with the descriptive approach, which included the collection and presentation of information and data. The necessity of the research required to adopt the statistical analysis approach using the SPSS program for the purpose of understanding the functional efficiency of the public urban spaces in the study area, on the basis that it is one of the most used programs in questionnaire analysis (Al-Rawi, p. 4, 2010).

## The Sample of the study

The researcher relied on the field study in the process of collecting information and data related to the research by distributing the questionnaire designed for this purpose. It contained the aforementioned five paragraphs, which were designed and adapted according to the nature of the target sample. The statistical questionnaire included two main variables: the efficiency of urban spaces, which represented the independent variable and the number of its paragraphs (14 paragraphs), and the spaces in urban cities, which represented the dependent variable and the number of its paragraphs (7 paragraphs) to cover the objectives of the study. Moreover, the level of answers was measured according to the five-point Likert scale, as shown below:

The sample size was (100) sample statistic, as (10%) of the questionnaires were distributed to the residents of the city of Karbala, the place of the research, and (10%) of them to employees in the city. The remaining largest percentage (80%) was distributed to passersby in urban spaces. For the purpose of analyzing the data of the study and testing its hypotheses, the program (SPSS v.26) was used, and based on that, a set of statistical indicators were used, including:

1. (Cronbach's alpha): It refers to the internal consistency of the scale.
2. (Kolmogorov-Smirnov test): It is used to test the normal distribution of the data.

As for descriptive statistics, the following measures were used: frequencies, percentages, arithmetic mean, and standard deviation.

## Definition of the city



It is a complex organic organization; it forms those complex blocks in the buildings and the people who move in and between them. In addition to that, it is a human investment that serves the material and spiritual needs of man, as it is considered a human settlement. On the other hand, Hartshorn describes the city as a concentration of population, characterized by a clear way of life through work and life patterns (Sefir, pp. 12 and 14, 2015).

### **The concept of urban space**

There were many definitions and explanations of space in the studies of theorists, as the concept of space occupied the thinking of philosophers and thinkers throughout history. Plato pointed out that geometry is the science of space. As for (Lensippus), he believed that space is a reality, although it is not characterized by materialism. Furthermore, Aristotle considered space a dynamic field with specific directions, resulting from the linkage of a group of places (Ali, p. 1, 2012).

### **Classification of urban spaces**

In terms of its dynamic characteristics:

Regardless of its effectiveness, urban space is divided into two types:

1. Mobile space: It is characterized by movement, direction and continuity, and is found in modern cities due to the presence of mechanical movement that needs dynamism and direction (Al-Talib, p. 69, 2017).
2. Fixed space: It has several characteristics that are represented as follows: being linked to a specific spatial spot, being totally or partially closed with a shape centered around a central focus, and

being geometrically regular or irregular, it is found in Arab Islamic cities, for example in inner courtyards (Ahmed, p. 69, 2020).

In 2007, Frederick mentioned that the designed and planned shapes with dynamic characteristics affect one's perception and experience in the built environment, as it was found that openness, closedness, nodes, links, squares, and streets are all components of the urban fabric and refer to the "static or moving" visual sequence affecting the city. He also mentioned that the term "dynamic" expresses movement. Since most activities in general can be distinguished in terms of movement or stillness, the appropriate spaces are divided into static or dynamic as an important formation in the urban fabric. Accordingly, when there is harmony between what the urban space offers and what the user needs, it will be a successful space (Ahmed, p. 69, 2020).

The third type: This type combines the advantages of the two previous styles, and thus combines centralization and directionality, which makes it a source of creativity in city designs because it achieves aspects of connection and interaction with the urban environment on the one hand, and responds to kinetic requirements on the other.

As for modern cities, they are characterized by the presence of the three types of urban spaces and depend on the ability of the designer to use them in a homogeneous design style.

## The study area

### A brief overview of Karbala's city center

The holy city of Karbala is considered one of the religious holy shrine cities in Iraq. It is privileged by its urban and historical value and the individuality of its urban center (Qasim, p. 55, 2022), represented by the existence of two important shrines that represent the central nucleus of the city, namely Imam Hussein (peace be upon him) and his brother Al-Abbas (peace be upon him) (Al-Ardawi, p. 80, 2022). They also represent the main elements of the spatial formation of the skyline (Al-Rushdi, p. 58, 2013).

### Spatial boundaries

The city of Karbala is located 110 km<sup>2</sup> to the southwest of the capital, Baghdad, at a circle of 32.6 degrees north, and it is located at a longitude of 44.0 degrees east, and it rises about 36 meters. The difference between the highest and lowest elevation lines passing through it is about 15 meters, and the city center represents the lowest area within the city of Karbala (Qasim, p. 55, 2020).

It is bordered on the east by the districts of Al -Husayniyah and Al-Hindiya, on the west and south by desert lands, and on the north by the district of Al-Hur. It is the main administrative center in the governorate that has economic and religious-touristic activities, and this was the reason to raise the prices of land and residential units in it (Al-Jawahiry, p. 16, 2022).

### The boundaries of the study area

In general, the city of Karbala consists of three districts: Karbala district, Ain al-Tamr district, and al-Hindiyyah district. Each of these districts contains sub-districts; Karbala district contains (the center of Karbala district, Al-Hurr district, and Al- Husayniyah district), while Al-Hindiya district contains (the center of Al-Hindiya district, Al-Jadwal Al-Gharbi town, and Al Khayrat town.), in addition to Ain Al-Tamr district.

Karbala city center consists of eight neighborhoods, which are the same names as the entrances (Bab) that are currently surrounding the old city (Attia, 2009, p. 114), shown in figure (1). They are (Bab Al-Salalima, Bab Baghdad, Bab Al-Taq, Bab al-Khan, Bab Al-Mukhayam, Bab al-Najaf, and Abbasiya neighborhood, which was divided into two parts, the eastern Abbasiya and the western Abbasiya).

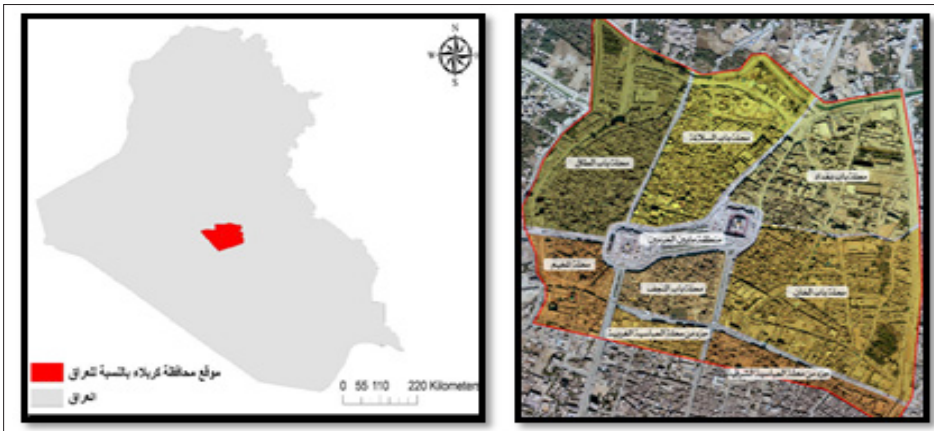


Figure (1) Shows the location of the study area in Iraq.

Source: (The urban renewal project for the center of the holy city of Karbala - the old city, p. 9, 2014)

## Geographical distribution of spaces in Karbala city center (the old city)

The distribution of urban spaces is considered crucial and necessary, as interest has increased in the recent period because of its positive impact on the region and its goers, whether residents or visitors, and because it represents an outlet that promotes an urban image of the study area. Because the region receives hundreds of visitors to the two Holy Shrines annually, it becomes necessary to pay attention to such spaces to provide recreational and social services at the same time. It is worth mentioning that the spaces in Karbala city center are distributed regularly at the present time.

According to the basic design of Karbala city center in 2014, it becomes clear that there are public spaces in the region, but they are limited to the space between the two Holy Shrines and public squares, such as Baghdad Square, Sha'baniyah Square, Al-Alqami Square, and Martyrs Square, as shown in figure (2), which shows the distribution of spaces according to the basic design of the old city in Holy Karbala.

The spaces in the study area do not only include visitors, but also residents in the area; however, personal interviews with passersby in the area showed that there are no movement problems in the area between the two Holy Shrines on normal days.

Unlike the millions of visitors who face many movement problems during the times of large pilgrims; therefore, the study focused on analyzing the movement of visitors on those occasions, as they are the most important in terms of users because of the huge

number of visitors to the two Shrines. There is a lack of sources and data on the spaces of this region (Baghdad Square, Martyrs Square, Al-Alqami Square, and Sha'baniyah Square) due to their modern composition and design. However, they were addressed in a simplified manner, and a basic model of spaces was chosen as the space between the two Shrines area, the largest urban space in the old city to be used to analyze the movement in the spaces.

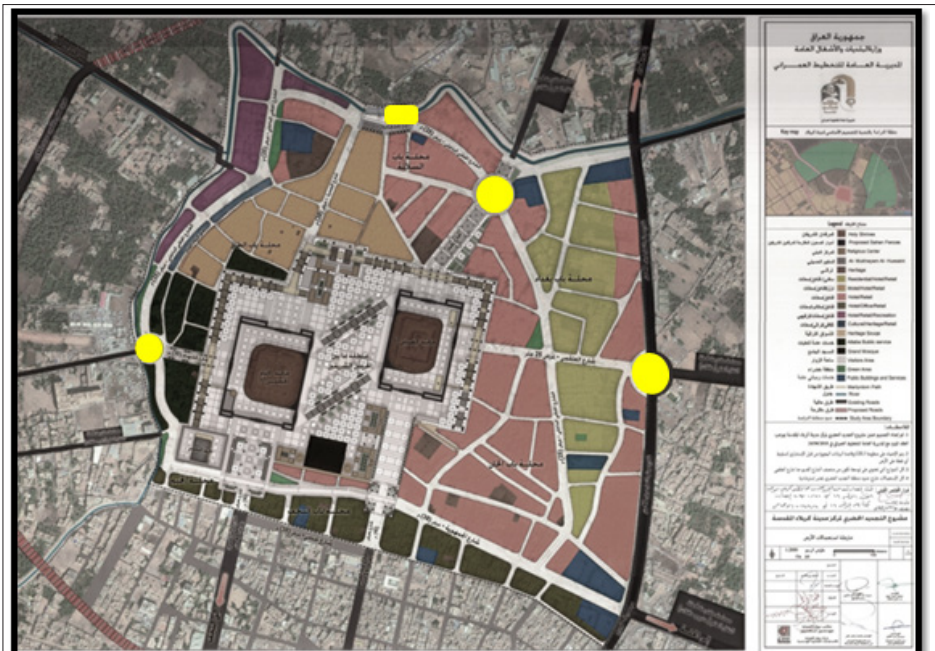


Figure (2) Geographical distribution of open spaces in the study area within the basic design

Source: From the researcher based on the basic design of the area from the Directorate of Urban Planning, Karbala, GIS Division.



## Functional efficiency of public spaces in the study area

### 1-The level of public space organization in the study area

A large percentage of the spaces' users in Karbala city center, up to (59%), confirmed that comfortable seating was provided in different classifications; however, not a small percentage (34%) confirmed the absence of those seats. This indicates the need for the spaces for seats, and this is due to the availability of security in the public spaces in the study area, as indicated by a large percentage (74%). Part of these spaces is used to carry out various activities, as confirmed by (58%) of the study sample. The study also proved that the spaces have an integrated space organization, as (63%) indicated that the spaces serve all the areas of Karbala city center.

A large percentage of the sample (60%), strongly rejected the entry of cars into these spaces, a matter that indicates that they contain comfort and entertainment for the residents as well as visitors of the two Holy Shrines. This was confirmed by a very large percentage of about (80%), which is due to the diversity of activities and means of entertainment within the space at a rate of (58%), which made these spaces qualified places for multiple uses (for rest, food, etc.).

From the above, it becomes clear that the public spaces in Karbala city center have a high level of organization in terms of their functional and social performances, because these spaces are protected from car traffic, and, in addition, they maintain good municipal services. This was observed by a large percentage of the sample, about (75%), where it was found that (87%) of the visitors and residents found that the

spaces have a continuous cleanliness follow-up. In addition, (76%) confirmed keeping pace with the continuous development of services in line with the current development of societies.

## 2-Accessibility level

A large percentage (90%) confirmed that the public spaces in the study area have very easy access, as this is due to the distribution and spread of spaces in the region on a regular basis and according to the housing need, as proven by a large percentage of the sample (77%).

When the study suggested to the respondents that cars would enter the spaces, the rejection rate was high and reached (60%), due to the problems caused by those cars entering the spaces that impede the movement of visitors and space passersby from the region's residents, and thus lead to a decrease in the quality of space.

## 3- The reality of social interaction for the functional efficiency of public spaces

The study revealed that (85%) of the users confirmed that the space works to raise the level of social interaction between residents and visitors, as well as the relationship between local and foreign visitors, as this works on cross-cultural contact between nations through the exchange of cultures when holding meetings in those spaces, and this is a good indicator of the success of the space's effectiveness.

One of the most important things that the planner must take into consideration is the efficiency of the relationship between the elements of planning, which are the effectiveness, the human being, and the



place. The activities and events in the spaces of the city center of Karbala interacted with each other. Hence, we realize the importance of space for social communication, as (58%) which is not a small percentage of the study sample, confirmed that spaces participate, to a large extent, in supporting social communication when being occupied by social activities.

It is worth mentioning that the spaces of Karbala city center, such as the space between the two Holy Shrines, have many events and entertainment activities, such as cultural and religious competitions, the establishment of cultural exhibitions or book fairs, and other events that are held on special occasions. Due to the quality of the design standards of the public spaces, they have become rich in content and serve the intended purpose of their presence within the basic design of the city. They are considered a good means of social communication and interaction, as indicated by (72%) of the study sample.

It is clear from the above that the spaces of Karbala city center have good social interaction, and this indicates the success of the space in providing its services to visitors and users.

#### **4-Spatial compatibility between spaces and user behaviors**

It is well known that public spaces are considered a social communication point within the urban city, if they are rehabilitated in terms of design and aesthetics. Furthermore, if well-organized, the public space provides a service for all ages. According to children, adolescents, and young adults within the study sample, they considered the spaces adjacent to their homes suitable for their meetings, as (50%) confirmed.

They were distributed for (entertaining, cultural, and social purposes), while (50%) of the sample considered that the spaces were suitable for visitors' meetings, especially for religious purposes such as reviving rituals, as in the space between the two Holy Shrines, on occasions or on regular days (such as congregational prayer, Arafa supplication, Kumail supplication, and delivering religious lectures, etc.).

## Discussion

Through the study of the analysis of the indicators above, it becomes clear that the spaces of Karbala city center have efficiency in providing functional performance of services. It worked on the establishment of many urban gatherings in these spaces through the participation of individuals and their interaction with the place through their association with the Holy Shrines in the region, where a sense of belonging to the place was very clear.

In this way, the place enhanced the interaction between all parts of society through participation in the prevailing values of customs, traditions, and certain behaviors for each activity associated with a specific time among users.

One of the reasons for the success of the spaces in Karbala city center was the suitability of the spatial location of the master plan, in addition to the possibility of easy access, which worked to attract users to pass by them while moving within the study area.

Volumetric compatibility also helped large numbers, especially during large pilgrimages, travel safely. It worked on the smoothness of movement through expansion, spread, and development in design to achieve flexibility in using space.

It is worth noting that the main reason for going to Karbala city center is to visit the two Holy Shrines (Al-Hussein and Al-Abbas, peace be upon them), because of the high sanctity and spirituality of these shrines that attract people from all over the world. This refers to the religious and cultural importance of these spaces through the authenticity of the place resulting from the support and Strengthening of the elements of the place to one another, as well as filling the spaces, especially the space between the two Holy Shrines, with religious symbols linked to the past of the region that caused its formation in this way.

These symbols evoke memories and history, and thus lead to raising the level of spirituality in the place and the performance of religious and Husseinite rituals in particular.

## Conclusions

1. The spaces of the study area work on social interaction, and this was confirmed by (85%) of the study sample.
2. The study proved that the place has easy access for (90%) of the users.
3. (34%) of the users confirmed that spaces need seats.
4. The absence of services for people with special needs. This was confirmed by (44%) of the users.
5. (48%) of the sample confirmed their dissatisfaction with the climatic treatments, especially at the peak of winter and summer.
6. The study concluded that the functional efficiency of urban spaces is of high quality in terms of service. This was evident through several planning, spatial, and social indicators that were previously studied.

## Recommendations

1. Providing seating in spaces of all classifications, especially for the elderly and people with special needs.
2. Laying bicycle paths for the residents for daily use.
3. Providing services for the elderly and people with special needs through the use of a special path for them.
4. The need to pay attention to climate treatments using modern technologies that raise the level of space efficiency.

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