Square as Urban Space in Iraq: The Effectiveness of Design Attributes on Social Interaction

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Abstract: Square is an element of urban space, an expression of public open spaces. It has been identified as the heart of cities, giving them an identity of place and a uniqueness of character. This paper seeks to determine the important environmental design attributes that influence user social activity in the square as urban space. The study adopts a quantitative approach, employing a survey questionnaire as the primary research instrument and supported by observation. This pilot survey uses a sample size of 32 users at the square as urban space respondents. Multiple regression analysis is performed to determine the effective design aspects of social activity, and the visual analysis is applied for observation. The study reveals that there are some elements, which have a critical influence on user activities in urban space in Iraq. Those elements are landscape features, provision of shelter and shade protection, the use and need facilities made available by public business, maintenance, and discovery. This study generates an understanding of user behaviour attitudes towards the square as public urban space in the Iraqi context. Thus, the designer should consider those square design elements that generate the activity in an Iraqi square.

Index Terms: Square, Urban Space, Environmental Attributes, Social Activity, Multiple regression.

I. INTRODUCTION

What are the environmental design attributes of an urban space and how do we determine their importance? First, it is necessary to place and define square as urban space. Many definitions of the term urban space have been proposed. Urban space exists on numerous scales and at different levels of comprehension and perception [1-3]. It can range from a small physical small scale such as a simple open space, a street node, square, plaza or park, to the expanse of an entire neighbourhood, city or country. The function of square can be commercial, educational, or residential among others. Architects, urban designers, landscape specialists and planners, mainly perceive the urban open space in physical terms and are usually focused on the connection between people and space, while urban sociologists focus on urban space from the view of social activity and interaction On the other hand, geographical and political scientists view square as urban space in relation to the social pubic, whether as individuals or collective entities and their privileges. The square as urban space is essential to urban dwellers, particularly in densely populated urban centres. It is generally accepted that being able to see and also feel the calming nearness of Mother Nature in an environment contributes to physiological and psychological well-being. Unfortunately, a review of the general design of urban spaces suggests that their designers and planners have failed to take into consideration the key features that are crucial in meeting the multi-facatted needs of the users. It appears that in many cases, user needs and design concepts fail to be adequately reconciled in a way that user needs are served.

[4], for one, observes that the most urban space designers prioritise business and recreational needs and urban spaces end up implicitly or explicitly as promotional tools instead of socially beneficial amenities Despite the evidence in the literature of much work that has been done on urban space, few have endeavoured to explore and determine the value of design features to urban space design from the user viewpoint.

This study aims to increase the understanding of how square as urban space design impacts the users' activities from a city space perception, and to explore the importance of these aspects on people interaction, besides offering empirical information that could serve as relevant and useful basis for the design of future urban space. Numerous earlier works have carried out investigations pertaining to the absence of public space redevelopment, applying the concept of optimum use and the crucial significance of the urban square but few of these researchers have considered integrating these important concerns into a study. Furthermore, most of the mentioned previous studies investigated situations in western countries. In contrast, this current study is based on the situation in a developing country, Iraq.

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II. ATTRIBUTES OF URBAN SPACE

For decades, urban designers, planners, architects and researches of urbanism have examined the aspects of urban space. [5], addressed issues of accessibility, management and equity together with stimuli and social interaction. Many other reports and empirical studies have collectively achieved substantial understanding of the character and use of urban space including public space, streets, plazas and urban parks [6-14].

Also, several researches have considered particular population segments in urban spaces, including females, the poor, certain ethnic communities, children as well as senior citizens. Even though urbanists have made efforts to introduce initiatives of urban space for many years, there is still considerable empirical work required to evaluate the efficiency of urban spaces better. Physical attributes of the built environment have been a focus of interest for many years among urban designers, architects and planners [15-19 among others].

Nevertheless, square requires items in their physical form that enables us to identify them from their environment as a clear and identifiable place [14,17]. Another physical element is size; spaces are endowed with attributes such as size, texture and patterns of the materials and features on urban space [20-23]. Numerous studies have been conducted on aspects of visual complexity, visual and aesthetic aspects (such as seating, urban space furniture and landscape aspects). These are the essential elements of an appropriate public space in physical terms [8, 24]. Sensation relates to human physical systems in their reaction to environmental stimulation. The four main significant senses in the interpretation and sensing of the environment include: seeing, hearing, smell and touch [25], and the aspects that are related to these senses are: comfort, Relaxation, Passive engagement, and Active engagement with the environment, Discovery, Vitality, and Joy [see... 26-35]. Location of urban space as one of the geographical aspects has a direct impact on influencing user activity and attendance. Generally, urban spaces are most efficient when they are centrally located, either in a town or neighbourhood, and are at the concourse of paths that normally used by people for other functions. Urban spaces are also more successful when they are in the midst of multiple use places [31].

Accessibility is another element that contributes to the success of any urban space. Location of urban space is affected directly by easy accessibility to main access roads that make the urban space a reachable place by all forms of transport. Connectivity should also be considered for linking people and the urban space, nature and the built pattern. Connectivity is a physical and physiological element related to user activities in urban space, which offers several options for a diverse range of activities, resources, services and places, and visual connections, encouraging physical activity [32]. Connectivity refers to straight paths, same level, and also shorter distances in-between areas within the urban space [33]. Managing a place to ensure protection and a safe environment can be achieved by employing certain strategies, referred to as hard and soft controls [35]. The place adaption attributes handle the manner that the urban space is maintained, which is an essential aspect to be taken into account for a public space to be successful. Managing a place to ensure security and safety of the environment can be achieved by implementing certain approaches, which are essential to provide protection against chaotic traffic, and freeing from the pressure of having to go through a network of roads that lead to urban space; provide Food and drink outlets, regular maintenance and cleaning [see 16, 31, 34, 35].

III. THE INTERACTION IN SOCIAL SPACE

A Square as urban social space is a living space, and vibrant as this kind of activity starts from an establishment of a relationship between two people or more in urban space, which leads reaction between them. This type of reaction is familiar for both sides are using a public space. Social interaction and communication can be a physical topic, respect, a conversation and the relationship between people and suitable activities, and it is the effect of the role of the people in space and their part in the group and social networks [36]. More and more people now live in cities driven by social and economic objectives not so easily obtained in a non-urban environment. There is no present empirical evidence of a clear relation between perception of community construct and the physical attributes of the urban space with its complete meaning. Even though some researches have suggested a connection between the sense of community and the physical environment, they failed to investigate the principle with its extensive meaning, comprising all the characteristics as suggested in the literature. Some of these studies deal with the environmental aspects but from limited perspectives. The physical aspects of the environment were shown to contribute to enhanced levels of social interaction between people, which is just one the many features of the sense of community [see 8-13]. Such studies did not explore the sense of community with its affective variables.

With regard to these points, it is for the purpose of determining the useful environmental aspects of user interactions and their activities. Evidence exists of the connection between connecting the public environment through interaction and human behaviour. The manner in which a Public Square is designed to physically affect the social life of its users directly or indirectly is attributed to human meetings and interactions and use of space is a crucial consideration.

IV. METHODOLOGY

This research adopted a quantitative approach using data from the pilot study. A specific survey method was utilised in this study, which was a cross-sectional survey design in questionnaire format. This research addressed the content validity and constructed validity. Pilot studies perform a variety of essential functions and could provide useful information for other researchers [37]. According to [38], the number (N) around 30 to 36 was recognised as a reasonable sample size for bootstrapped confidence intervals for the pilot survey. Therefore, this study used 32 face-to-face questionnaire surveys among urban square users in Erbil-Iraq for the pilot study. The questionnaire items adopted a 5-poin scale (1 = agree to 5 = disagree). All items were translated into Arabic and Kurdish languages (by qualified translators) after which the translations were submitted to a panel of experts to verify the format, organisation, and suitability of the information, content and the language used in the instrument.

Using the data collected from the cross-sectional survey, the social activity (dependent variable) determined the items of environmental attributes for urban space by calculating the; (i) activity type and social communication on urban space such as visiting times to the place, the number of friends in the urban space; (ii) meeting and interacting with people from different social and cultural classes, and (iii) the level at which to start a conversation with strangers. However, the features of design attributes were treated as independent variables, and multiple regression analysis was applied to identify the features with significant impact on the sociability index of urban space.

V. THE STUDY AREA

Data shown in this research were collected at Erbil Square in Erbil City (population 932,800), in northern Iraq. Erbil Square is located in front of Erbil citadel (the landmark of Erbil city and a World Heritage Site) (see;

https://whc.unesco.org/en/list/1437) (see Figures 1-2). Erbil Square was selected as the study location for several reasons. Firstly, this urban space is a significant public place in the city and is viewed as being safe. Secondly, the square is easily accessed by major forms of transport and is an ideal place for people to meet, interact or just sit, and if they so wish, walk around the city [39]. There are also commercial establishments in the vicinity and other small individually-owned or local stores which are part of the Square. It can be seen therefore that Erbil Square is an urban space that is safe, where people can congregate, sit or interact with other visitors or walk around. It is a space where one can be alone if one chooses or a meeting place to meet and befriend strangers, a perfect place for social interaction. These square milieus that have explain above are among the criteria of social interaction [23]. For these reasons, Erbil Square is the ideal location for this study.
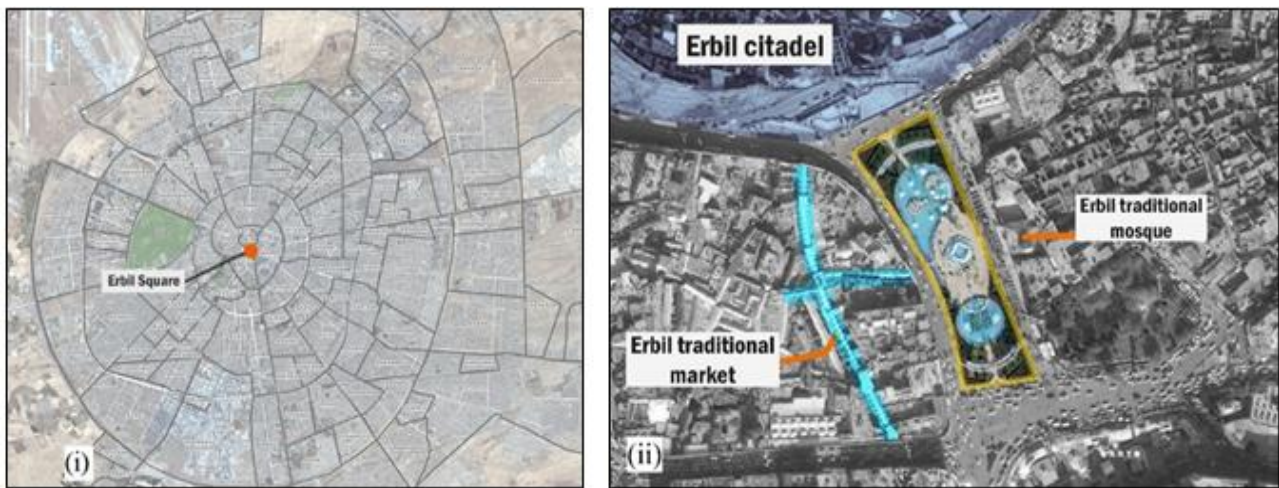

Fig. 1 Location maps of Erbil Square shows: (i) the location of square in the center of Erbil City. (ii) Map of the square with the surrounding. Source: (i) iraq@reach-initiative.org

Fig. 2 Views from study area parts in Erbil Square

VI. FINDINGS AND DISCUSSION

This pilot survey offered a snapshot of human activities and an opportunity to observe human behaviour in an urban space. Multiple regression was applied to help determine which urban space variables are most important in regression models for user interaction index. The multiple regression analysis for all features of the environmental attributes of square as urban space were (R^2= .883, F= 6.241, Significance of F= .001). Table 1 shows a regression model for all the features that represent the four main environmental attributes that affect the user interaction index representing social activity in urban space. The result showed interesting outcomes from the pilot survey, the standardised coefficients show that hard and soft landscape features as among the important elements of physical environmental attributes showing a standardised coefficient with the largest absolute value (Coefficient = 1.421, t = 3.347, Sig.= .005). Thus indicating that the landscape elements are one of the physical attributes with high impact on the urban space of Erbil Square, The observation suggests that users are more attracted to an area that contains soft and hard landscaping features as well as planting (natural elements), street furniture, and subspaces. According to previous studies, the features of soft and hard landscape are essential in encouraging social activity in square as public space. Furthermore, natural elements and high-quality materials are pleasing to visitors, while public art and availability of entertainment and social events provide pleasure and have an impact on social interaction [31].

Table. 1 Shows the standardized coefficients on the regression model for the four environmental attributes

| | Model | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | |
					Lower Bound	Upper Bound
	(Constant)		3.105	.008	1.516	8.289
Geographical	Location	-.627	-2.284	.038	-1.079	-.034
	Accessibility	.368	1.454	.168	-.157	.816
	Connectivity	-.115	-.320	.754	-.413	.306
Physical attributes	Form	-.113	-.412	.687	-.341	.231
	Hard & Soft landscape	1.421	3.347	.005	.286	1.306
	Seating	-.700	-1.707	.110	-.590	.067
	Shelter and Protection	1.409	2.809	.014	.095	.707
Place Adaption	Uses and activities	-1.115	-2.444	.028	-.977	-.064
	Food & drinks	-.295	-.737	.473	-.556	.272
	Vending	.761	1.852	.085	-.105	1.437
	Maintenance	-.996	-4.487	.001	-1.014	-.358
Sensory Stimuli	Light	-.756	-2.036	.061	-.713	.019
	Safety	.086	.227	.824	-.529	.654
	Noise	.344	1.403	.182	-.085	.408
	Relax	-.008	-.028	.978	-.274	.267
	Passive engagement	.634	1.071	.302	-.401	1.203
	Discovery	-1.069	-2.352	.034	-1.276	-.059

Note: left-side grouping spans "Environmental Attributes" covering all rows below (Constant).

a. Dependent Variable: Social Activity index

The results also indicate that shelter and protection have the second highest value (Coefficient = 1.409, t = 2.809, Sig. = .014). Observation shows that shade and protection from the direct sun in summer and rain in winter are important features for effective urban space. The elements of shelter and protection in urban space can be in the form of trees, awnings, building arcade, canopies, and other shading devices in the urban space or from buildings connected directly to the urban space (see Figure 4).

According to previous studies, the elements of shelter and protection are essential in encouraging social activity in square as public space. The changes of climate indicate that many seating areas will need to be at least partially protected from cold winds or bright sun [31, 40].

The uses and activities (Coefficient = -1.115, t = -2.444, Sig. = .028) are among the place adaption features ran third highest in terms of high-value element among the environmental attributes. This element represents the services provided by the public authorities that manage the urban space, such as the police and information centre, shopping places, cafes, public toilets, and other facilities (Observation, see Figure 5). [22] and [23] proposed that the suitable functions for public spaces are commercial activities such as a shopping centre, marketplace, cafes, community places, and social spaces.

However, a well-maintained clean urban space with regular maintenance is also an important element. As Table 1 shows, the maintenance element (Coefficient = -.996, t = -4.487, Sig. = .001) is also significant in place adaption features. This have supported via observation that there are maintained by the authority via hired people to clean the place every day in order to make sure the place is clean, etc. [8], stated that in the case of any urban space the public will be more likely to visit the place if they see it as well managed as evidenced by its level of cleanliness and general maintenance.

Discovery (Coefficient = -1.069, t = -2.352, Sig. = .034) is one of the sensory stimuli elements and has good Standardised Coefficients in the regression model. The respondents believe that urban space impacts on social activity because the place carries many memories for the users of the urban space and that makes the urban space reflect the identity of the urban space in particular and the city in general. According to observations, a place like Erbil Square is located in the midst of a historical area and surrounded by traditional markets and a heritage mosque. All these bring back memories and feelings to people in the Erbil square.

Fig. 3 Showed awnings, building arcade, and canopies some parts of the urban space in Erbil Square

Fig. 4 Showed a cafes (as a community place) with place for smoking (Shisha) beside the urban space in Erbil Square

Fig. 5 Showed the location of the study area "Erbil Square"

VII. CONCLUSION

This paper provided an examination of the most important design attributes affecting peoples' activities in an urban space in Erbil City in Iraq. It presents the potential to be applied as the model for square design of these urban spaces in the Iraqi context. From the findings, there are elements of design attributes that influence peoples' needs in square as urban spaces.

The landscape features, providing shelter and shade protection, the uses and needs facilities provided by public business, the well-maintained urban space, and the elements that reflect the identity of the place are the key attributes in square as urban spaces. The study also recommends that

more focus should be given on specific design attributes of square as urban space such as safety, lighting, location and connectivity, and vending and food facilities, when designing open public urban space. This study is part of a more extensive research by the researcher to study the effect of design characteristics on user behaviours in Iraqi urban space. Thus, there are some elements with essential impacts on human activities in square as urban space in Iraq, and these elements should have the attention of urban planners and designers, architects, and the public authorities, to incorporate these elements when designing any square as urban space.

These attributes should be considered in the process of designing a public space, which is supposed to meet peoples' needs in the Iraqi context. This study suggests a future research should be done on the behaviour as focus where the same square as a case study. Hence, in order to meet the peoples' needs in urban space, urban design has to identify and consider these essential design attributes and their outcomes.

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